

Commercial Coil Men Try to Draft a Code and then Give Up



Representatives of the finned coil industry remembered that they had an appointment with the NRA in Chicago last month to discuss formation of a basic code, but the NRA forgot to remember—and so the coil men were left to shift for themselves. (1) "We can't afford to waste time—let's try to work out our own code without NRA's help," suggests Charles Oppé of G & O Mfg. Co. to C. T. Bappler, Bush Mfg. Co., and R. C. Colman of McQuay, Inc. (2) "O. K.—I'll go to work on a rough draft," says Mr. Bappler—and he does, as James W. Hatch of Bush and Mr. Coleman stand by to offer suggestions. (3) "Article II, Section A—The term 'finned coil manufacturers,' when used herein, shall mean . . ." Mr. Bappler reads the completed draft to Mr. Coleman, H. G. Rieckelman, Fedders Mfg. Co., and Morrill Dunn of McCord Radiator & Mfg. Co.



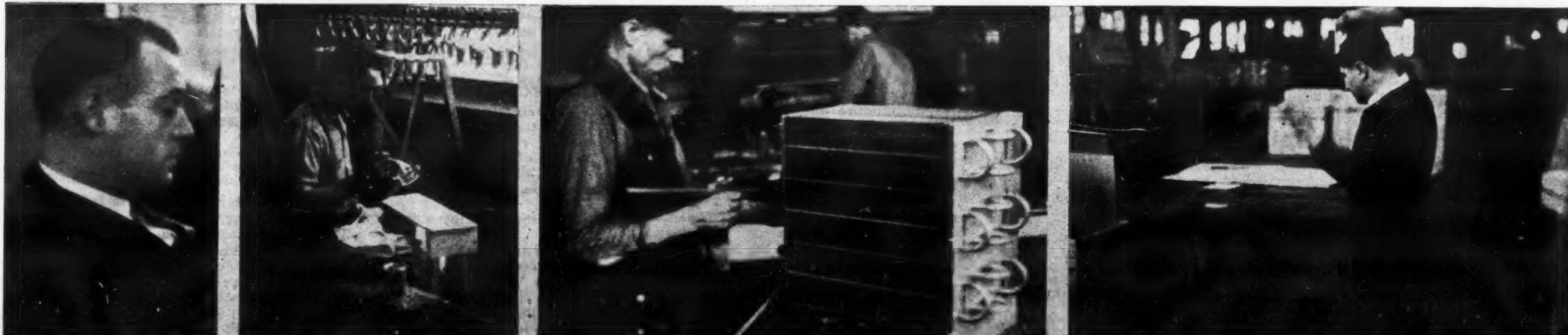
(1) H. G. Rieckelman, Fedders Mfg. Co., tells Stewart Bruce McNaught, counsel for Refrigerating Machinery Industry Code Authority, and a fellow coil representative that he feels it useless to try to draw up a code without guidance from Washington. (2) H. J. Krackowizer, president of Refrigeration Appliances, Inc., and Charles Oppé gaze into space and wonder if the NRA wouldn't have done well in accepting the original code submitted some months ago. (3) Mr. McNaught goes over the proposed code to spot things which might be objectionable to NRA chiefs. (4) "If you ask me," says James W. Hatch of Bush Mfg. Co. to a confederate, "I think that any code would be obsolete in a year or so—the way this industry is moving."



Genial Morrill Dunn of McCord Radiator & Mfg. Co. was one of the busiest men at the finned coil men's meeting, as these candid camera views indicate. (1) "Well, boys, light up—and let's get down to brass tacks." (2) "Mr. Krackowizer, suppose you tell us just what Mr. Comber suggested as points in our basic code when you met him in Washington." (3) "No-o-o-o, Mr. Bappler, I believe I'd cut that section out entirely." (4) "You don't say!" (5) "Yes, Mr. McNaught, I think I understand what you mean—but the point I'm trying to make is this . . ."



Interested and active in attempting to work out a finned coil code were (1) R. W. Kritzer of Peerless Ice Machine Co. and (2) M. P. Fugle of Larkin Refrigerating Corp., who is telling an associate that, after previous tiffs with NRA, working out a code unassisted now is apt to be just so much lost labor. (3) H. J. Krackowizer pays his luncheon check. (4) "I give up—let's call it quits," and Mr. Krackowizer leaves the finned coil code to Fate. (5) Game, but knowing when he's licked, the baffled Mr. Bappler agrees.



Mr. Kritzer again, and some of his employees in the Peerless Ice Machine Co. plant in Chicago. The shipping clerk in the picture is trying to figure out an order from St. Paul, Minn.

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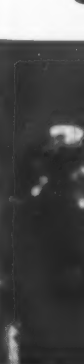
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REFRIGERATION NEWS

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R.M.A. Reports Sale of 10,325 Machines in '34

Tonnage Totals 60,768 for Year; 15 Members Report Sales

DETROIT—During 1934, 15 members of the Refrigerating Machinery Association sold a total of 10,325 refrigerating machines as compared with 8,026 reported for association members in 1933. The total tonnage of machines sold during 1934 amounted to 60,768 and the average tonnage per machine was 9,305. Total tonnage in 1933 was reported at 55,314 with an average of 6.89.

Exports in 1934 amounted to 1,649 machines in comparison with 1,132 in 1933. Sales of 4,840 machines sold in United States were made through distributors while 4,764 were sold by direct representatives.

The gross dollar value of refrigerating machine sales during 1934 reached a total of \$19,258,623.

The table on page 12 gives a detailed report of sales by quarters and for the year as a whole showing domestic and export sales, total and average tonnage, gross dollar value, and distribution of sales through distributors and representatives.

Grace Diebig Named to Westinghouse Staff

MANSFIELD — Miss Grace Diebig was recently appointed assistant director of the range home economics staff of Westinghouse Electric & Mfg. Co. here, reports Reese Mills, manager of the range and water heater department of the company. Miss Diebig is assistant to Miss Pearl Gray, director of range home economics.

As assistant director, Miss Diebig will work at headquarters in Mansfield and in the field, supervising demonstrations, training courses, laboratory research, and other phases of range home economics. She will also take part in the Westinghouse Home of Tomorrow Institute training work, supervising schools in range home economy and home service courses.

Kitchen activity, insofar as demonstrations, home service training, and advisory sales plans are concerned, will come under her direction.

Miss Diebig's experience includes six years as a home manager, three years as a social worker, and positions as a dietitian in the Mercy Hospital in Canton, Ohio, and supervisor in a Gallion, Ohio, school.

Macy and Manufacturers Compromise To Stop New York Retail Price War

Air Conditioners Say NRA Is Worse Racket Than Al Capone Had

CHICAGO—The board of directors of the Furnace, Sheet Metal, and Air Conditioning Association of Illinois and Cook county voted last Friday to scrap the NRA code authority for that industry, and charged that "the NRA is a greater racket than any ever sponsored by Al Capone or any of his henchmen."

Announcement of the group's stand regarding the NRA was made by J. A. Miedema, former head of the Illinois state code authority. Action was taken following a vote of directors representing 8,000 members of the organization.

"Our members reached the end of the trail," said Mr. Miedema, "when administration officials tried to shake down code members for the privilege of voting at the industry conference in Cincinnati two weeks ago."

Mr. Miedema declared he went to the conference armed with proxies of 20,000 central west members of the code. There, he said, all but 23 of the proxies were refused, and the middle western representatives were offered the right to vote 6,000 of them in exchange for a certified check for \$120,000.

"The national code authority in our industry is a collection agency to gather vast sums of money to be distributed among the favored few in unearned salaries and unbelievably padded expense accounts," Mr. Miedema charged.

Kelvinator & Leonard Get Gov't. Contracts

DETROIT—United States government awards of blanket contracts for 1935 federal purchases of electric refrigerators showed Kelvinator Corp. and Leonard Refrigerator Co. received 14 out of a total of 18 awards for conventional type units.

Kelvinator Corp. was awarded nine of the 15 items on which it quoted, while Leonard received contracts for five sizes of cabinets. Kelvinator is to supply 4, 5, and 8-cu. ft. lacquer-finished refrigerators, and a 13-cu. ft. porcelain-finished model, all for shore use. Kelvinator will also supply five

(Concluded on Page 2, Column 5)

NEW YORK CITY, April 16

—Designed to end threats of a destructive price war in the rich New York territory, an agreement has just been reached among leading manufacturers of electric refrigerators and New York department stores. Principals in the deal are General Electric and Macy's, supported by leading manufacturers including Kelvinator, Frigidaire, and Westinghouse and most of the large New York department stores such as Wanamaker, Gimbel, Bloomingdale, Loesier, Stern, and Namm.

Nubbin of the agreement is that Macy's will sell the General Electric Flatop line exclusively (at its customary 6-per-cent-less-for-cash policy), that Macy's will cease selling refrigerators for which it has no franchise, and that other department stores in New York will not sell the G-E Flatop line, although they may sell G-E Monitor Top refrigerators.

This agreement is said to have been promoted by the Nema group (Refrigeration Division of National Electrical Manufacturers Association), which was concerned by the havoc which an open price war might cause in the \$10,000,000 market for household refrigerators in the New York territory this year.

Protected and even encouraged by the NRA, the Macy 6-per-cent-less policy has already devastated this rich metropolitan market for radios, cosmetics, and liquors, and they were determined that household electric refrigerators should not suffer the same fate.

Even though department stores have done no more than 10 per cent of the total refrigeration business in New York City annually (this year it is possible that they may account for 15 per cent to 18 per cent of the total), the sort of price competition between them which is engendered by Macy's policy can make it extremely difficult for other dealers to sell nationally advertised merchandise, say these executives.

Practically every party to the agreement stands to gain by it, participants feel. Here's how it works out:

Frigidaire, Kelvinator, and Westinghouse need fear no longer that the sale of bootleg models from their lines will precipitate retaliatory price-cutting on the part of other department stores—which would lead to the

(Concluded on Page 20, Column 1)

FHA Bars Loans on Refrigerator Where Occupant Is Lessee

RENO, Nev.—Persons leasing a home under a building and repairing lease may not use Federal Housing Administration funds for the purchase of electric refrigerators or ranges, according to a ruling handed down recently by John S. Halley, executive secretary to George W. Friedhoff, FHA manager for Nevada.

Lessees may, however, use FHA funds to repair the property, the ruling holds. Homeowners may use FHA funds both for property improvement and purchase of electrical appliances.

Reason for the distinction between lessees and homeowners, Mr. Halley explained, is that "technically speaking, these appliances do not become an integral part of the real property, and when the lessee moves from the premises, he naturally would take with him any of these appliances."

Frigidaire Shipments in April May Hit 70,000

DAYTON—Shipping activities at the two Dayton plants of Frigidaire Corp., indicate that all monthly records will be broken in April with dispatching to dealers and distributors of more than 70,000 household and commercial refrigeration units and railroad and unit air conditioners. E. G. Blechler, president and general manager, told members of the Frigidaire national distributing organization at their quarterly meeting last Tuesday in Dayton.

In addition, Mr. Blechler said, the Dayton payroll of Frigidaire's Taylor St. and Moraine City plants probably will top any previous April payroll.

Refrigerating Machinery Group Meets May 23

WASHINGTON, D. C.—The annual meeting of the Refrigerating Machinery Association will be held at The Homestead, Hot Springs, Va., on May 23, according to W. S. Shipley, chairman of the industry's code authority.

Discussions will include current business developments, the future of code operations, and the election of a code authority for the coming year.

Air-Conditioner Group Changes Name, Location

Association Proposes to Establish Standards On Ratings

WASHINGTON, D. C.—The organization formerly known as Unit Air Conditioner Manufacturers' Association has changed its name to the Air Conditioning Manufacturers' Association and has moved its headquarters to Washington, D. C., it was announced following a meeting of the association last week.

Offices have been opened in the Southern building here, and William B. Henderson is serving as executive secretary.

The association, composed of manufacturers of air-conditioning equipment, is working toward standardization of equipment rating, installation, and application of air conditioning, and is seeking to establish broad and sound trade practices in an effort to avoid the abuse of public confidence from which other rapidly-growing industries have suffered in the past.

"Public recognition of air conditioning as a regular and commonplace part of daily life will rest largely on the shoulders of the responsible, reliable, and progressive manufacturers who have the public interest foremost in their operations," states a bulletin issued by the association.

Further cooperative steps will be discussed at a meeting of the association, scheduled for Hot Springs, Va., on May 23.

Present members of the association are Carrier Engineering Corp., De La Vergne Engine Co., General Electric Co., Kelvinator Corp., J. H. McCormick & Co., John J. Nesbitt, Inc., Parks-Cramer Co., B. F. Sturtevant Co., Westinghouse Electric & Mfg. Co., and York Ice Machinery Corp.

Lipman Names Taylor District Manager

BELOIT, Wis.—S. G. Taylor, for the past several years in charge of commercial refrigeration sales for the C. L. Percival Co., Des Moines, has just been appointed district sales manager with the General Refrigeration Co., manufacturer of Lipman refrigerating equipment.

His territory will extend from St. Louis to Denver and from the Twin Cities to Dallas.

'Stewart-Warner Is Very Much in the Refrigeration Business', Say These Top Executives



Joseph E. Otis, president of Stewart-Warner Corp., known as "Joe" to Stewart-Warner employees, was full of questions when the editor visited him in Chicago the other day. (1) "What's your prediction on the number of units the industry'll sell in 1935?" (2) "Well, we'll get our share of that business, eh Jim?" to James S. Knowlson, chairman of the board. (3) "Stewart-Warner's in refrigeration to stay." (4) "I want you to tour the plant, and watch the boys putting together that new float valve assembly." (5) "Figures? Talk to Jim, he's our specialist."



James S. Knowlson, chairman of the board of Stewart-Warner Corp., a close observer of sales and production figures. (1) "Reports for the first three months of 1935 indicate that we're going into our best year." (2) "Right now our production is about 400 refrigerators a day." (3) "That pipe was becoming as strong as our promotion campaign." (4) Down the line in another office M. W. Thompson of Stewart-Warner's advertising department, tells a dealer that mats for his local newspaper campaign will reach him in a few days.

Caswell Dealers Place Their Bets on Entries in Refrigerania Sweepstakes



It was Race Night at Caswell, Inc., Michigan General Electric distributor, when the "Refrigerania Sweepstakes" got under way April 1. (1) Syd Caswell, head of the distributorship, lights up after telling Detroit salesmen about the Ford V-8 and other prizes awaiting the best producers. (2) Sales Promotion Manager Harry Warren and Sales Manager Paul Lewis (in plug hats) assure an ambitious salesman he's a cinch to win—if he's ahead when the contest closes. (3) "They're off!" Caswell salesmen enjoy the fun, each with an expectant eye on that prize money at the finish line. (4) Paul Lewis tells his men it'll take work, not "horseshoes," to lead the field in this race.

Universal Cooler Heads Have Dinner Meeting

DETROIT—Executives and department heads of Universal Cooler Corp. held an informal dinner meeting last Friday night at Hotel Statler and later attended the London-Brown world's championship wrestling match at the Olympia. The party was under the direction of Frank S. McNeal, general manager, who made a short talk at the dinner meeting.

75 Salesmen Attend Uniflow Meeting

ERIE, Pa.—Seventy-five salesmen attended the convention of the Uniflow Mfg. Co., manufacturer of Lectrik-Ice beer, beverage, and water coolers and Lectrik-Ice electric refrigerators here recently, at which sales and merchandising plans for the year were discussed. Sessions were held in the factory auditorium, with a banquet the last night of the convention.

Conservador Wins Prize As Useful Invention

TULSA, Okla.—The Conservador feature of the Fairbanks-Morse electric refrigerator manufactured by Fairbanks-Morse Home Appliances, Inc., was recently awarded first prize for being "the most useful invention in the home appliances field during 1934," by the National Inventors Congress meeting which was held here recently.

13 Makes Exhibited At Philadelphia's Spring Show

PHILADELPHIA—Thirteen leading makes of refrigerators were exhibited at the seventh annual electric refrigeration show sponsored by the Electrical Association of Philadelphia here last week. The show, occupying two floors of the Edison building, was open daily from 11 a. m. to 10 p. m. Admission was free.

The following makes of refrigerators and the distributors representing them at the show were:

Coldspot, Sears, Roebuck & Co.; Crosley, Graybar Electric Co., Inc.; Electrolux, Philadelphia Gas Works Co.; Frigidaire, J. J. Pocock, Inc.; General Electric, Judson C. Burns, Inc.; Gibson, Motor Parts Co.; Grunow, Peirce-Phelps, Inc.; Kelvinator, Raymond Rosen & Co.; Leonard, Klein Stove Co.; Norge, Trilling & Montague; Stewart-Warner, Philadelphia Distributors, Inc.; Westinghouse, Westinghouse Electric Supply Co.; Williams Ice-O-Matic, Dickel Distributing Co.

Visitors at the show were given an opportunity to win an electric refrigerator, valued at \$200, which was given as an award in two limerick contests conducted for show visitors.

Sales of more than 45,000 domestic electric refrigerators in Philadelphia and vicinity are expected to be made this year, declared George R. Conover, managing director of the Electrical Association of Philadelphia, at the opening of the show.

"The continual progress by engineers and manufacturers toward more economical operation and greater reliability and efficiency," said Mr. Conover, "is steadily increasing national acceptance of the electric refrigerator; and the industry looks forward to this year as the greatest in its history."

"The steadily rising costs of foodstuffs and the ability of the electric refrigerator to preserve food in perfect condition indefinitely, and to utilize every scrap of 'leftovers,' make it more than ever an indispensable factor in the modern American home and, indisputably, a self-liquidating investment," he continued.

"With proper reserve capacity in an electric refrigerator," he pointed out, "advantage can be taken of 'special sales' of foodstuffs for economical buying in quantities and that which is not immediately consumed can be preserved in perfect condition until used."

"Economies effected in this method of buying have been shown to save more than enough to pay for the cost and operation of an electric refrigerator, so that in a period of a year or two it has paid for itself, saving meanwhile, perhaps, more than the usual monthly budget payments."

"The Philadelphia territory," he declared, "is one of the outstanding communities in the United States in its appreciation of the advantages of electric refrigeration and has been for years one of the leaders in acceptance of this modern household necessity."

"Throughout the depression, for the past five years," he averred, "Philadelphia, in a period of declining business, has steadily increased its purchases."

"Such facts as these, in view of the improvements and dollar value now being offered in the 1935 lines," he concluded, "make us confident that Philadelphia and its environs will continue to lead as a user of the electric refrigerator—no longer a luxury, but a household necessity."

Concurrently with the Philadelphia show, the electrical association also sponsored a similar exhibition in Chester, in cooperation with the Chester dealer section of the association membership.

During the last half of the week, a third refrigeration show was held in Coatesville in cooperation with the dealers of that city.

Sales to Dealers by Crosley Up 400%

CINCINNATI—Distributor-to-dealer sales of Crosley shelvador electric refrigerators have increased approximately 400 per cent during the first three months of 1935 as compared with the same period in 1934, reports Lewis M. Crosley, vice president of the Crosley Radio Corp.

"Sales in all territories are showing substantial increases," Mr. Crosley said. "The number of employees engaged at our factory now number more than 4,000, approximately as many as were employed in 1929, and the payroll exceeds the peak payroll of that year," he stated.

Kelvinator & Leonard Get Gov't Contracts

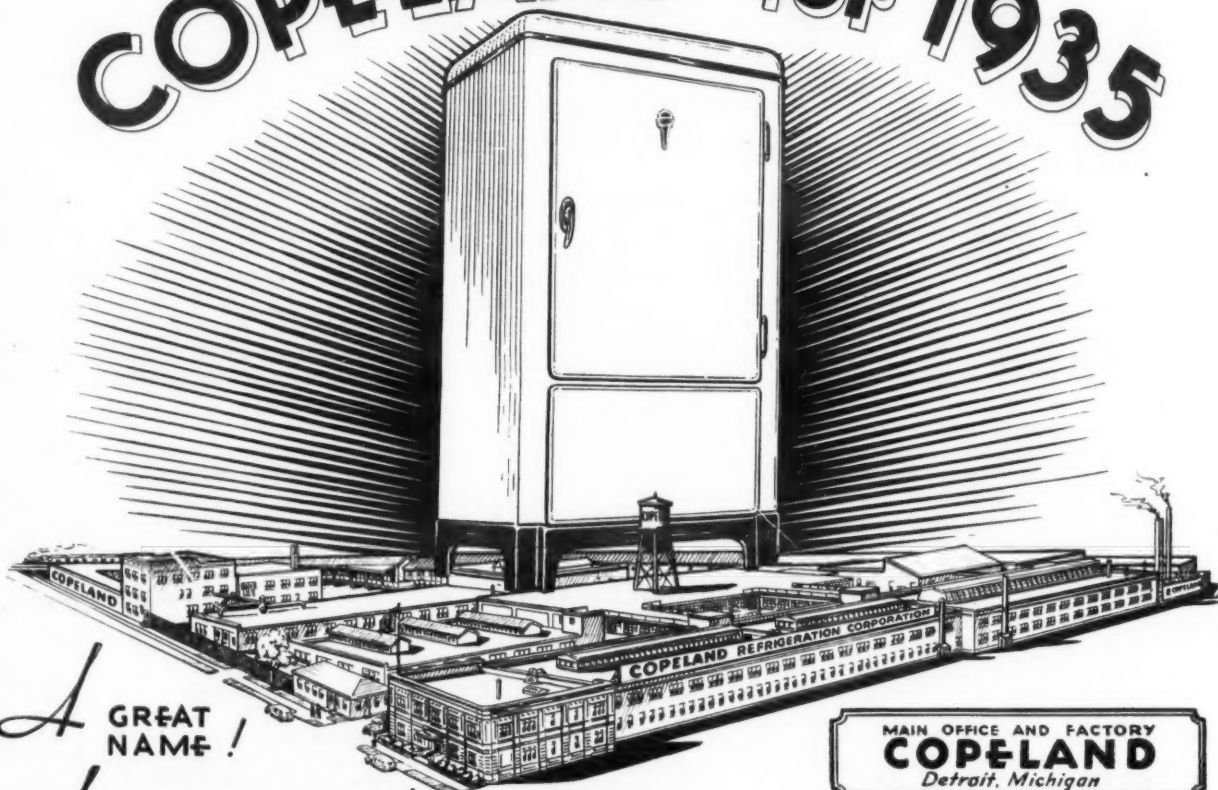
(Concluded from Page 1, Column 2) sizes of porcelain-finished cabinets for marine installation.

Leonard Refrigerator Co. was awarded contracts for furnishing 6 and 7-cu. ft. sizes finished in lacquer and for the 6, 8, and 10-cu. ft. porcelain-finished units for shore installation.

Contracts were awarded on the basis of overall costs of competing refrigerators over a 10-year operating period. Bids were evaluated according to a formula which included all various costs, sizes of cabinets, percentage of operating time in maintaining a 45° inside temperature in a 100° room, and the average watts input required to maintain refrigeration under the same conditions. Insulation requirements called for a maximum heat leakage of 0.15 B.t.u.'s per hour per sq. ft. per degree difference in temperature.

In addition to a number of other requirements for marine contracts, refrigerators were required to withstand a rolling test maintaining normal operation at angles as wide as 40° from the vertical.

COPELAND for 1935



MAIN OFFICE AND FACTORY
COPELAND
Detroit, Michigan

AND *Now* THIS GREAT NEW COPELAND PLANT at DETROIT!

In this great establishment are housed the necessary skill, experience, facilities, backed with unexcelled financial stability, to insure a product of unparalleled value.

These elements, in abundance, are represented in the Copeland line of refrigeration which is designed for ready sale, *dependable performance*, insuring rapid turnover and maximum profits for distributors.

Scientific precision, 100% manufacturing control, rigid inspection and unwavering production standards are the intangibles which guarantee the continued excellence of all products bearing the Copeland trademark.

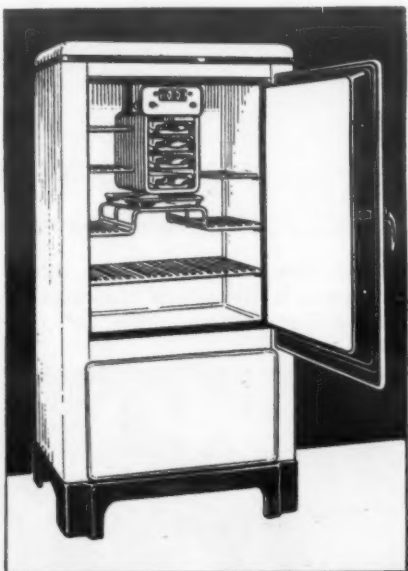
Some distributing franchises are available to those who can qualify . . . Write today for details.

COPELAND REFRIGERATION CORP.

Manufacturing a complete line of Commercial and Domestic Refrigeration

Holden Ave. at Lincoln

Detroit, Mich.



COPELAND Model 955—A striking example of the last word in refrigeration construction. Gleaming white Porcelain cabinet, 9.5 cu. ft. gross, 8.5 cu. ft. net storage capacity, 16.8 sq. ft. shelf area, 4 trays, 112 ice cubes or 10 lbs. of ice.

Copeland

DEPENDABLE ELECTRIC REFRIGERATION

MCCORD
Refrigeration
PRODUCTS

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

METLFLEX ICE TRAYS

SPIRAL FINNED TUBING

SPIRAL COPPER FINNED IRON, STEEL OR COPPER PIPE

MCCORD RADIATOR & MFG. CO. DETROIT

Wins



FIRST PRIZE

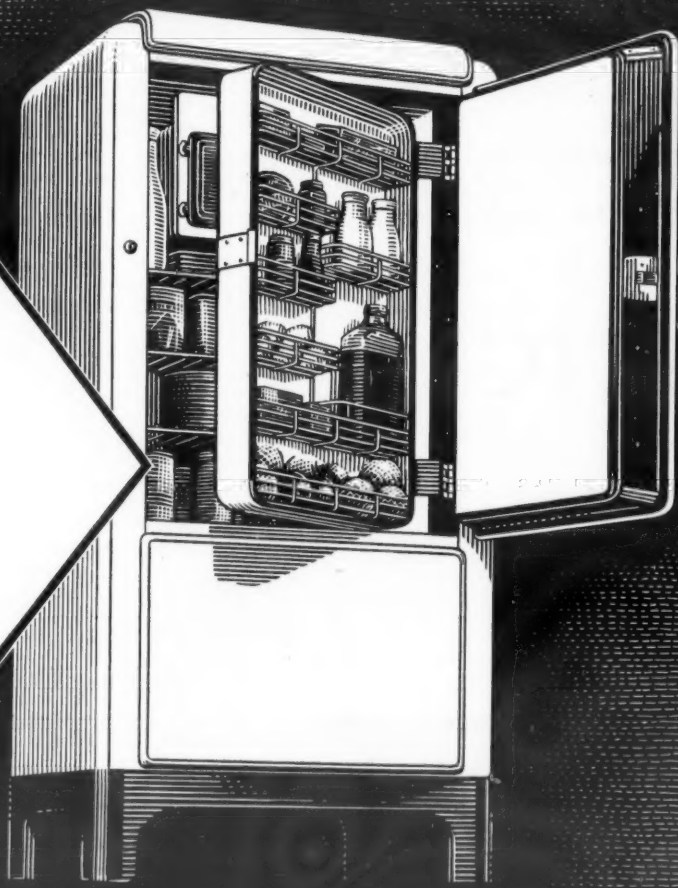
AS THE MOST USEFUL HOUSEHOLD INVENTION

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MOST USEFUL
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INVENTION

NATIONAL INVENTORS'
CONGRESS
Tulsa, Okla.
1935

What IS the CONSERVADOR?

It is a shelf-lined *inner door* located just behind the outer door. It keeps hot kitchen air OUT and the cold air IN the main food compartment while most frequently needed items are being removed or replaced. Its roomy shelves provide fingertip storage convenience for the foods used most often. This patented and exclusive feature offers outstanding selling advantages because every prospect can see and instantly understand its extra convenience and economy.



National Inventors'
Congress held
at Tulsa has just
awarded the
**FAIRBANKS-MORSE
CONSERVADOR
FEATURE**
FIRST PRIZE as the
most useful
household invention

When experts—every one an inventor with patents of his own—acclaim the new CONSERVADOR, it must be outstanding.

More significant than the vote of any one group, however, is the overwhelming preference American housewives are showing for this new refrigerator. They are voting with **ORDERS**. In four short months this refrig-

erator has set history-making sales records.

There are still a few territories open for dealers who act quickly. Wire today for full data on America's most valuable refrigerator franchise.

Fairbanks-Morse Home Appliances, Inc.,
430 S. Green Street, Chicago.

Cable Address: FAIRMORSE, CHICAGO

FAIRBANKS-MORSE

RADIO-WASHING MACHINES-IRONERS

105 YEARS OF PROGRESS IN PRE



CISION MANUFACTURING

Refrigerators

Sales Idea for the Week

By V. E. Vining, Manager of Department Store Sales,
Westinghouse Electric & Mfg. Co.

We hear a lot of bunk these days about high pressure selling. Personally, I don't know what is high pressure.

But, if I did know, you can bet your sweet life I'd use it, because I am idealist enough to believe that if through high pressure methods I might force an electric refrigerator into a home that needs one I can provide purer food for that family—safer milk for the baby—better meat for father's indigestion.

If I can save mother from making one trip through the slush and ice and snow in the winter—if I can save her one cold—if I can keep her from exposing herself and her family to influenza or other epidemics, by reducing her trips to crowded stores and market places—

If I can save one trip a year, for the doctor, to that home—

If I can help make the home so attractive father will do his entertaining in his own kitchen—

If I can put one smile of contentment, through labor saved, on mother's face—if I can help smooth out one faint wrinkle of tiredness—

If I can do any of these things—any one of these things—through the use of a little high pressure, I will have satisfied a sense in me that hates wishy-washiness and gutless selling, and will not have used any powers of persuasion I may possess in vain.

High pressure may be just common sense—mixed with a bit of romance.

Stage & Radio Stars Attend Pittsburgh Refrigerator Show

PITTSBURGH — Celebrities from stage, screen, and radio appeared on the entertainment program of the annual spring refrigeration and appliance show held here April 6 to 13, under the joint sponsorship of the Electric League and the Pittsburgh Press.

Phil Saxe and his NBC orchestra provided music every afternoon and evening. Mr. Saxe acted as master of ceremonies, and Joe Hiller of the Music Box Night Club, arranged the entertainment program.

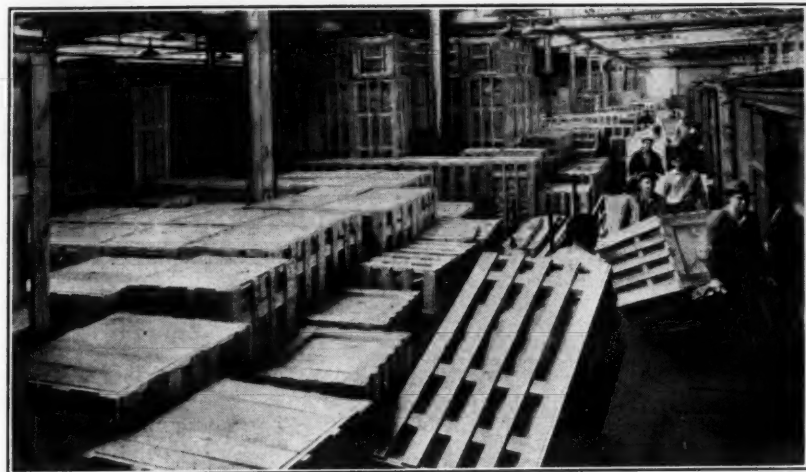
Guest artists appearing at the show were as follows:

Muriel Wilson, the "Mary Lou" of the Showboat program; Jack Fulton, singer, formerly with Paul Whiteman's Band; Ruth Carhart, discovery of Roxy; Richard Himber and Dora Rinehart (Miss Rinehart is now with Roxy); Frank Luther; Mary Small; Morton Downey; Zora Layman; Hal and Dora Rainer (Rainer writes many of Joe Penner's gags and songs); Fred Waring's Entertainers; "Schlepperman" from Jack Benny's radio program.

Displays at the show featured refrigerators and included air conditioners, washers, ironers, radios, and small electric appliances.

League members exhibiting at the show were: Anchor Lite Appliance Co.; Apex-Rotarex Corp.; Brown Dorrance Electric Co.; Danforth Co.; General Electric Supply Co.; Hamburg Bros.; Ludwig Hommel & Co.; Houston-Starr Co.; Hurley Machine Co.; Iron City Electric Co.; Ochiltree Electric Co.; Pittsburgh Auto Equipment Co.; C. R. Rogers Co.; Suburban Electric Dev. Co.; and J. A. Williams Co.

Frigidaire's Busy Shipping Room



Shipping activities at Frigidaire's Moraine City plant, where more than 70,000 refrigeration and air-conditioning units are expected to leave this month. On March 29 a total of 103 carloads of equipment were shipped.

Rayburn Wheeler Bill Opposed by Nema

WASHINGTON, D. C.—Declaring that if the Rayburn-Wheeler Bill becomes law that it would seriously retard recovery in the electrical manufacturing industry, B. W. Kerr, representing a committee of the Board of Governors of the National Electrical Manufacturers Association, testified in a recent appearance before the House Interstate and Foreign Commerce Committee that such legislation would delay re-employment in the industry.

In a brief presented to the Committee, he pointed out that the present demand for electric current was practically at its all time peak and that industrial recovery will create a substantially higher demand for electrical current than ever before.

Industry Was Improving

The brief presented to the Committee discussed the problems and the point of view of the industry under seven headings.

"Before the introduction of the Rayburn-Wheeler Bill, signs of recovery in the electrical manufacturing industry in general and in the electric power equipment industry, were evident," Mr. Kerr declared. "In common with other capital goods industries, employment has been at a low ebb and sales at only a fraction of normal."

Discussing the effect of the proposed Holding Company Bill on employment in his industry, Mr. Kerr said, "Full recovery of employment in the electrical manufacturing industry is largely dependent upon sales to public utilities and upon their ability to purchase needed equipment."

Depend on Utility Business

"Sales to the public utilities represent almost the entire business of approximately one-third of the manufacturers of electric power equipment. This part of the industry has been severely depressed and many of these manufacturers lack the resources to carry them much longer through the continued depression. Any legislation such as the Rayburn-Wheeler Bill which might prove detrimental to these manufacturers has caused grave concern to the National Electrical Manufacturers Association."

"The introduction of this Bill in the House definitely has hurt confidence in public utilities' securities, and it has impeded the financing of public utility development," Mr. Kerr said, adding that the Bill has definitely affected new sales of electric power equipment.

Mr. Kerr further stated that there is imminent need for increased generating capacity to provide for the demand expected in two or three years, and that if the public utilities are to provide for this imminent demand, it will have to begin purchasing additional generating and distributing equipment immediately.

"It is absolutely essential," he explained, "for public utilities to secure additional capital in order to provide for this required expansion and their modernization needs."

Westinghouse Promotion Woven into Talks on Feminine Charm

CLEVELAND—Novel sales promotion plan, co-sponsored by the Danforth Refrigeration Co. of this city and the Mook Electric Supply Co. of Canton, Ohio, is a 10-week broadcast over radio station WTAM, in which Westinghouse advertising is woven into talks on feminine charm.

During the five-minute periods that the program is on the air, Miss Elnora Rodenbaugh gives suggestions for the acquisition of charm, stressing the serenity and poise possible to the housewife whose domestic tasks are lightened by the possession of a Westinghouse refrigerator.

Miss Rodenbaugh's talks are broadcast five days a week at 4 p. m.

Marietta Dealers Hold Home Makers Institute

MARIETTA, Ohio—A Home Makers Institute, which opened April 2, and which will continue for several weeks, is being sponsored by the Marietta Electrical Association, comprised of 14 appliance dealers, in cooperation with the Monongahela System.

Displays and demonstrations of electric refrigeration, cookery, laundry equipment, small appliances, and home lighting are featured at the exhibit.

Two connecting storerooms are used for display purposes. A complete electric kitchen, in which are installed a water heater and cabinet type sink, has been set up on a stage in one room. Dealer displays of appliances are arranged in the second room.

Home economists from the General Electric Co. and Westinghouse Electric & Mfg. Co. are assisting with the demonstrations.

Bertha Hixson Explains Use of Refrigerators

BURLINGAME, Calif.—Miss Bertha Mae Hixson, educational director of the Electric Appliance Society of Northern California, was hostess at the showing of 1935 electric refrigerators at the opening of a new store here by the Wisnom Hardware Co. recently.

Miss Hixson explained the care of refrigerators and discussed how the housewife could make her electric refrigerator pay for itself, through quantity buying, saving of left-overs, and the practice of other economies. She also served samples and gave recipes for frozen desserts and ice cream.

General Furniture Co. to Sell Gibsons

CHICAGO—General Furniture Co. here has been appointed Gibson dealer by the Commonwealth Utilities Co., local Gibson distributor. Mr. Gene Coyne is manager of the appliance division of General Furniture Co.

Sell this complete line

No limit in meeting any home or store requirement when you sell

WILLIAMS

ICE-O-MATIC

NO matter what the installation calls for, you can quote on it with Williams Ice-O-Matic. Right now in household refrigerators you can sell a large slice out of that market. And all year 'round with Ice-O-Matic commercial refrigeration, engineered to the job, you can fill even the most exacting specifications.

It means an all year paying business with every item easier sold, longer in profit. And Williams traditional finest materials and workmanship insure that your profits stay in your pocket.

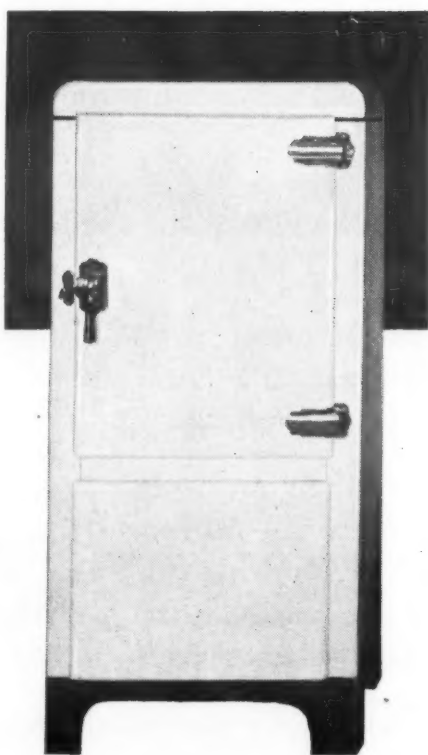
Grocers, delicatessens, butchers, restaurants, florists, hospitals, institutions are just a few of the many installations on which you can quote a better proposition with more in it for you.

Sell cooling equipment for motor trucks. Sell a complete line of milk cooling equipment. Sell electric or gasoline powered compressors. Also air-conditioning equipment—Williams Air-O-Matic—for homes, shops, restaurants, theatres. Every item with Williams performance and profit.

Have back of you the world's greatest concern specializing in the control of temperature. Products in use in 48 countries—53% of sales from users' recommendation.

Look into this now. Some choice points open for distributor or dealer. Letter or telegram will bring full details of Ice-O-Matic franchise. Or paste coupon on a postal card. Send it today.

Ice-O-Matic Refrigeration Division
WILLIAMS OIL-O-MATIC HEATING CORPORATION
Bloomington, Illinois
Mfrs. of Oil-O-Matic, Ice-O-Matic and Air-O-Matic



WILLIAMS OIL-O-MATIC HEATING CORPORATION
Ice-O-Matic Division, Bloomington, Illinois E. R. N. 4-5
Please send me full details of the 1935 Ice-O-Matic line and franchise.

Name.....
Address.....
City.....State.....
Present Business.....

WILLIAMS
ICE-O-MATIC
REFRIGERATION

Meet the "X" Family!

KRAMER

"JX" "KX" "MX" COILS

KX CASE EVAPORATOR

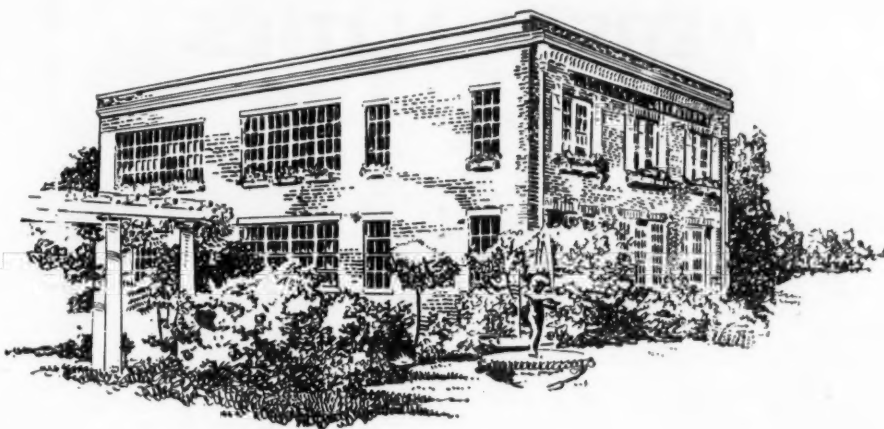
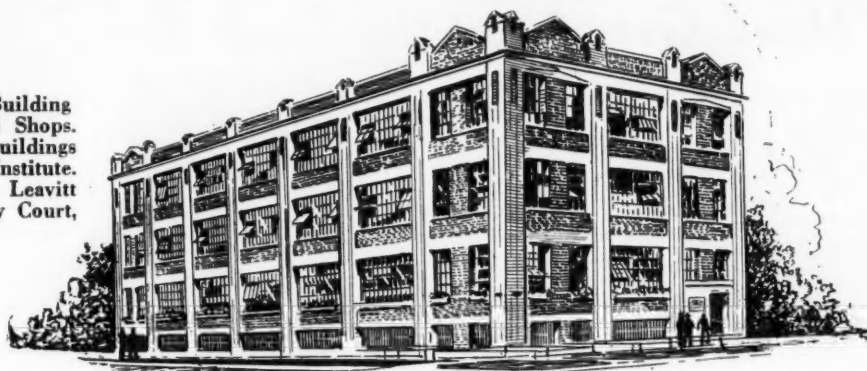
Send for Catalogs

TRENTON AUTO RADIATOR WORKS

Main Offices and Factory, TRENTON, NEW JERSEY
NEW YORK: 210-212 West 65th Street
PITTSBURGH: 5114 Liberty Avenue

Case manufacturer's inquiries—with details and specifications—solicited, for quantity quotations on quality brand coils.

Left: Administration Building
Right: Laboratory and Shops.
Two of the three buildings
occupied by the Institute.
Lawrence Avenue, Leavitt
Street to Saint Anthony Court,
Chicago.



A MESSAGE *to* MANUFACTURERS • DEALERS *and* DISTRIBUTORS



HOME STUDY . . .

Refrigeration and Air Conditioning Institute Training is a well balanced combination of home-study and practical shop-work. All of the required study is done by the student in his spare-time, at home, without interfering with his present work, and without the expense of living away from home and of attending classes for long periods of time.

Upon completion of the home-study section of the Training, the student is required, also, to complete an intensive course of instruction, and engage in practical work on standard refrigeration and air conditioning equipment, in the Institute's laboratory and shops in Chicago, under the direction of competent instructors. Two weeks are required for the resident work, and a certificate is issued only upon satisfactory completion of both sections of the Training. (Motor Coach transportation from the student's home to Chicago and return, is furnished by the Institute).



PLUS PRACTICAL TRAINING IN OUR OWN SHOPS . . .

Refrigeration and Air Conditioning Institute Training covers the fundamental principles, and the practical application of these principles, in Household, Commercial, and Industrial Refrigeration; Domestic, Commercial, and Industrial Air Conditioning; also Installation Engineering, Estimating and Cost Figuring, Servicing and Repair, Refrigeration and Air Conditioning Sales Work, the "Business End" of Refrigeration and Air Conditioning, etc. Tuition includes Instruction, Laboratory and Shop work, Job Tickets, Engineering Data Sheets, Engineering Handbook, Consultation Service, Vocational Guidance, and transportation to and from Chicago.



... MAKES DEPENDABLE TECHNICIANS,
... WORTHY OF YOUR CONSIDERATION

The Refrigeration & Air Conditioning Institute, of Chicago, announces a completely new type of Training Program,—designed to assure an adequate supply of "properly" trained technical men for all branches of the Refrigeration and Air Conditioning Industry.

The development of this Training Program, and the creation of the Course of practical Instruction on which this program is based,—was begun over two years ago, at the invitation of several prominent manufacturers in this field, who called our attention to the great need for "properly" trained technical men, and who,—because of our eighteen years experience in training men for responsible technical work,—felt that we were best qualified to arrange and carry out a program of this kind.

In our work of preparing this Course of Training we have been fortunate in having the heartiest kind of cooperation and assistance from practically every manu-

facturer in this field. A group of leading manufacturers have already *officially* endorsed this Training, and are now recommending it not only to their own men, but to others who seek a career in Refrigeration and Air Conditioning work.

To all of you, . . . many the future employers of the ambitious men who will avail themselves of this Training opportunity . . . our thanks for the help you have given us. To your executives . . . our thanks for their advice and counsel . . . their confidence and encouragement. To your engineers . . . our thanks . . . for their hearty cooperation, and the vast amount of material with which they have supplied us. Working together, we have produced what we believe to be the . . . MOST SOUND . . . MOST UP-TO-DATE . . . MOST THOROUGH . . . Training of its kind ever created. We deliberately set out to make it just that . . . knowing that you would never be satisfied with anything less.

THE STAMP OF APPROVAL

The Refrigeration & Air Conditioning Institute is proud to have received the *official* endorsement of so many of the leading manufacturers in this field. To have earned such recognition is, in itself, an achievement. But in a larger sense it is an inspiration and a challenge to us to

work untiringly for the good of the Industry. And we now dedicate ourselves to this task.

Below are the firms who are endorsing the Institute's Training.

COPELAND
CROSLY
GRUNOW
KELVINATOR

FAIRBANKS-
MORSE
MERCHANT
& EVANS

LEONARD
SERVEL
SPARTON
SUNBEAM

STEWART-
WARNER
UNIVERSAL
COOLER

TRUPAR
WESTINGHOUSE
ZEROZONE

THE BOARD OF GOVERNORS

The Institute's entire Training program . . . and all other activities of the School, including the shaping of its policies,—are under the actual supervision and direction of a Board of Governors, consisting of technical experts

of recognized standing in the Industry . . . appointed by manufacturers from the above named group. These men are your representatives, too, in the management of this Institute.

L. K. BAXTER

General Service Manager,
Merchandising Division,
Westinghouse Electric and
Manufacturing Company.

CHAS. R. D'OLIVE

Assistant to the
General Sales Manager,
Stewart-Warner Corporation.

C. L. OLIN

General Service Manager,
Commercial Division,
Servel, Inc.

E. A. SEIBERT

General Service Manager,
Kelvinator Corporation.

To such manufacturers as are not familiar with this Training Program . . . to all distributors and dealers in the Industry . . . we extend an invitation to learn more

about it. A letter addressed to me, care of the Refrigeration & Air Conditioning Institute, 2130-2158 Lawrence Ave., Chicago, will bring you full particulars.

Ray A. Smith

PRESIDENT

REFRIGERATION AND AIR CONDITIONING INSTITUTE • *Chicago*

PERSONALITIES

By George F. Taubeneck

Nice Fresh Fish

One day last week F. M. COCKRELL assumed a new role, that of fish peddler. To his attention had been shipped a box of fresh smelt, packed in ice. They were the gift of H. V. HIGLEY, secretary of the Ansul Chemical Co., Marinette, Wis.

There were enough smelt in the shipment to feed a good-sized breadline, and Mr. Cockrell was able to bestow generous gifts of fish to every member of the office force (except TED QUINN and the writer, neither of whom know any good cooks).

We haven't yet noticed any appreciable improvement in the office intelligence as a result of this wholesale consumption of brainfood, but trust it will show up soon.

Mr. Higley writes that around the first of April each year, Marinette enjoys a "smelt run." The little fish swim up the Menominee River by the millions to spawn, the "run" lasting about a week.

It becomes a gala occasion in Marinette, and hundreds of the citizens come out every night to catch the fish with drip nets and all sorts of home-made contraptions. (See picture on this page).

Hundreds of tons of smelt are caught thus, and are shipped to all parts of the country.

Anyway, on behalf of the staff of ELECTRIC REFRIGERATION NEWS and personal friends of the Cockrells, sincere thanks and appreciation are offered to Mr. Higley.

Making Refrigeration A STABLE Business

SYD CASWELL, G-E distributor here in Detroit, recently had the fun of watching his sales lieutenants "wake up" after their rousing send-off for the Refrigeration Sweepstakes contest in the Caswell territory to the realization that their enthusiasm was going to cost them some money.

Before the meeting, held in Caswell's new headquarters on Hancock St., Syd had donated \$100 each to PAUL LEWIS, FRANK CARSON, and HARRY ROADY (managers of rival divisions in the race) to use for wagers, with the understanding that the winners were to use the money for partying the men in their divisions who had helped them win the bets.

In the heat of the excitement evoked by the wagering that night, the bets were doubled. Roady even giving Lewis odds of 2 to 1 that his division would finish first. This extra, unbudgeted money will come out of the managers' own pockets.

Upstairs in Syd's office after the meeting, whither the writer had repaired with the genial Mr. Caswell, Messrs. Lewis and Carson, suddenly "came to," and were they excited!

Mr. Caswell figures that the winners ought to be able to stage quite a party on all the money that will be coming to them.

Union Trouble

In the last issue of the News you may have noticed a strip of candid snapshots of E. L. WEEMS, of the Chicago Airtemp distributorship. You could almost see him think, his facial expressions were so revealing.

In the legend underneath the pictures we mentioned his approval of the News editorial on the wisdom of the young air-conditioning industry exchanging cost information, and standardizing installation practice, in order to prevent the possibility of the industry doing business at a loss because of ignorant competition.

At the time we talked to him he suggested the formation of some sort of Better Business Bureau, which would assemble cost information, approve a standard set of installation practices, and would police the industry in some manner.

The air-conditioning industry will have enough troubles, he thinks, without being attacked internally by destructive price-cutting.

As a sample, he points out the straightjacketing Chicago unions (the most troublesome in the country) are giving air-conditioning distributors.

The requirement that a union engineer be employed to supervise air-conditioning equipment "forever" after its installation is hampering the strides of this infant industry, he declares. At present, he says, chances of selling equipment to owners of small motion picture theaters are faint because of the cost of union upkeep.

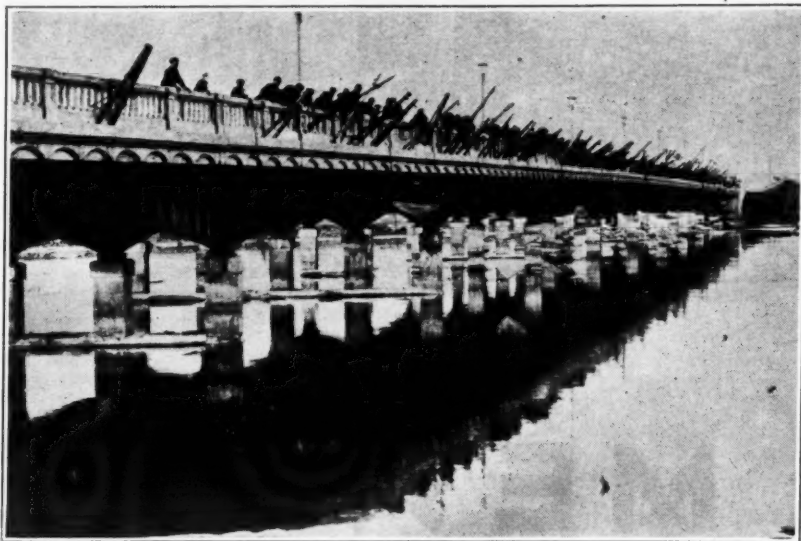
A recent survey showed that of the 327 motion picture houses in Chicago only 70 had air conditioning, and most of these were large theaters. The remaining 257 theaters were looked upon by the air-conditioning industry as the best single group of prospects for sales during 1935.

Small theater owners are reluctant to install the equipment when they learn that they will have to employ a union engineer at \$57.50 a week to watch the plant.

A. J. Landvogt, secretary of the International Union of Operating Engineers, local No. 399, states that the union's requirement for supervision of air-conditioning plants is several years old.

"Wherever the plant is, it's in our jurisdiction," Mr. Landvogt told a

The 'News' Gets in on this Smelt Run



All Marinette, Wis., citizens turn fishermen during the "Smelt run" each spring. From the catch of this crew, strewn across the bridge of the Menominee River, Secretary H. V. Higley of Ansul Chemical Co. sent a big box full to Publisher F. M. Cockrell of the News.

Chicago Tribune reporter (who was "tipped off" about the situation by Weems and other air-conditioning contractors). "We claim it and go after it to see that an engineer operates the plant."

Landvogt said the union does not insist upon placing its men in private residences having the plants.

No line has yet been drawn between the sizes of equipment the union insists upon supervising, he declared, but small theaters are included in its "jurisdiction."

What Is a Dealer?

To the statistics hounds who write us long letters and questionnaires from the advertising agencies, we aren't always so satisfying in our replies. In the first place, the refrigeration industry is too young yet to be reduced to a set of figures as coldly precise and regimented as a trayful of ice cubes.

In the second place, we have often decried the making of important decisions by men who attempt to feel the pulse of the nation without leaving their desks in New York City.

A dealer, we told one agency man recently, is liable to be anything. You simply can't classify electric refrigeration dealers into convenient little groupings. As a sample, we give you this letterhead, which arrived in the mail the other day:

"Honaker Harness & Saddlery, C. W. Hurt, Mgr., manufacturers and dealers in harness and saddlery goods, men's, women's, and children's shoes, refrigerators, radios, washing machines, floor coverings, funeral supplies; carload dealers in Allen parlor furnaces, Allen ranges, furniture, and house furnishings, Honaker, Va."

Australian Joke

Our good friends in Australia, F. C. Lovelock, Ltd., put out a little house publication called *Gas Leaks*. In the latest issue to reach our desk there is a little joke which may appeal to service men and engineers:

"Ignorance of the layman on the technicalities of refrigeration often takes amusing turns. The following was heard in a service department:

"A country customer telephoned asking for some advice on his installation, and during the course of conversation, they had cause to refer to the compressor.

"Feeling that here, at least, was a point on which he was quite sure, the client burst out with, 'Oh yes, I know the compressor, it is the thing that pumps the S.O.S.'!"

Miss Whoopanholler From Westinghouse

It always tickles us when someone else has trouble getting other people to understand and spell correctly his or her name. Our own is such a sneezer that it seems to baffle people no end (a secretary one time collected misspellings of Taubeneck from envelopes which came in the mail, and in one month had 23!).

Anyway, KATHERINE HAUZEN-ROEDER of the Westinghouse press bureau experiences the same sort of difficulty. One day she showed us two letters which came in the same mail—both from Westinghouse correspondents. First letter was addressed to Miss Hantzenweder; the second to Miss Hoopingarner!

Unanimously the Westinghouse or-

ganization at Mansfield has chosen to call her Miss Whoopanholler.

Catching the spirit of the thing, we have addressed letters to her under the following aliases:

Hassenpfeffer, Hoopenheimer, Smith-eroedernagle, Pfooffenmutter, Stoop-enroederbaum, Prattenswacker, Hasshekotit, Schultzendorfer, and Hatten-racker.

BOB RICHARDS, a co-worker of Katherine's, was in to see us last week. He says that she is getting a little fed up with it all. And we don't blame her. Hence this public apology, with a promise to cease and desist. Enough, by golly, is enough.

Crosley Dealer Goes Through 4 Dust Storms

Living through four dust storms in five days, one of which chased him out of the state and followed him more than 1,000 miles, was the experience of LEE E. PUTNEY, Crosley dealer of Irving, N. Y., on his return from a trip to McCook, Nebraska, to visit relatives there.

Describing one of the storms at Denver, Mr. Putney writes: "In less than ten minutes it was upon us. The air was filled with clouds of fine powder, finer than flour, and the brightly shining sun was completely blotted out. When we first saw it rolling toward us, the natives thought it was a cyclone except for the great size of its front.

"We retreated into the house and closed all the doors and windows tightly, but the dust sifted in through almost impossible places. That evening we ate a supper finely sifted over with the top soil of Kansas. It got in our eyes, ears, and hair. It gritted our teeth. Even inside the house the air was hazy.

"When we went to bed that night, the sheets were gritty. And when we woke up in the morning, the outline of our heads showed in a quarter-inch deep layer of dust. The rug on the floor was completely overlaid with a thick coating, so thick that you couldn't see the colors."

Mr. Putney declares that "sand, whipped by a gale, filled the air with clouds of sharp, stinging particles that almost suffocated everything in its path, and etched deep pits in his windshield."

Attention, Mr. Roosevelt

While reading a book by PAUL MORLAND, one of the smoothest writers to come out of France in many years, we ran across the following passage:

"One of the joys we expect of New York is that of living where neither gas nor telegraph nor modes of communication nor education are state or municipal monopolies, and where, therefore, they work."

Tell that to your senators and representatives. And to FRANKLIN D. ROOSEVELT next time you talk to him.

This Is How Our Old Friend, Howard Mateer, Looks in His New Surroundings



In answer to all the questions we receive about the health, happiness, and prosperity of our former associate, Howard Mateer, we present these snapshots, taken in his office. "Mat" and the inseparable nickel cigar are in the center, of course; and on each side of him are views from his office high in the McGraw-Hill Bldg. He can almost hang his hat on a skyscraper.

Question: What Does a Sales Promotion Manager Do When His Wife Is Away? Answer: He Talks Business



(1) During his wife's vacation in warmer climes Duane Wanamaker of General Household Utilities has been unlocking the door to a lonely house. (2) "I'd certainly enjoy spending the evening with you," he says. (3) "I'd like to tell you about the results our radio program is getting." (4) "Don't expect me early in the morning," he tells L. W. Passow, his helper.

Westinghouse Gives Eject-o-cube Tray for Names of Prospects

MANSFIELD—Westinghouse Electric & Mfg. Co. now has available for its dealers a mailing known as the "packaged plan." The plan offers a free "Eject-o-Cube" ice tray to every present Westinghouse refrigerator owner who submits the name of a prospect who buys a refrigerator within 60 days from the time the dealer receives the name.

The mailing includes a two-color, illustrated Eject-o-Cube folder, a multi-graphed letter, two Westinghouse Owners' Club Reward Certificates, and "Thank You" cards.

The plan suggested is as follows:

1. Dealer orders as many sets of mailing pieces as are needed to reach refrigerator owners in his territory.

2. Dealer orders from his distributor a few Eject-o-Cube trays for demonstration and store displays.

3. When mailing material arrives it is ready for use except for addressing envelopes and mailing. Letters come imprinted with dealer's name and address at the bottom.

4. Dealer has salesmen follow up owners by telephone or personal call. Salesmen may take along a sample tray to show owners.

5. When prospect names are received, they are checked to see if they have been submitted previously. "Thank You" cards are mailed to acknowledge receipt of names and to notify if names are not eligible.

Montgomery-Ward Loses NRA Eagle for Not Paying Code Costs

WASHINGTON, D. C.—Removal of Montgomery Ward & Co.'s Blue Eagle for failure to pay its assessed share of retail code administration costs was announced Monday by NRA.

The recovery administration said that it had sent the mail order company a letter March 26, advising it of a complaint against failure to pay an "equitable contribution," and that no reply had been received.

Sewell Avery, president of Montgomery Ward & Co., when informed of the removal of the firm's Blue Eagle, said that administrative machinery for the retail code under the NRA is "illegal and unfair."

"The payment of assessments arbitrarily determined by the Code Authority we consider unfair and illegal," Mr. Avery said. "We have operated under the original general code, employing 33,000 persons throughout the country. We believe in the broad principles of spreading employment and increasing wages."

Walter A. Knoop, executive secretary of the Chicago retail code authority, said the firm had complied fully with labor requirements of the code:

Radio Manufacturers Elect 2 Directors

NEW YORK CITY—Two new directors have recently been appointed to the board of the Radio Manufacturers Association, to fill vacancies caused by the deaths of former board members.

George A. Scoville, vice president of the Stromberg-Carlson Telephone Mfg. Co., was elected to succeed the late W. Roy McCanne, while Allen H. Gardner, president of the Colonial Radio Corp., Buffalo, replaced the late W. S. Symington.

Ben Abrams, head of the Emerson Radio & Phonograph Corp., has succeeded Mr. Symington as chairman of the RMA membership committee.

Refrigeration Show Held in Clarksburg, W. Va.

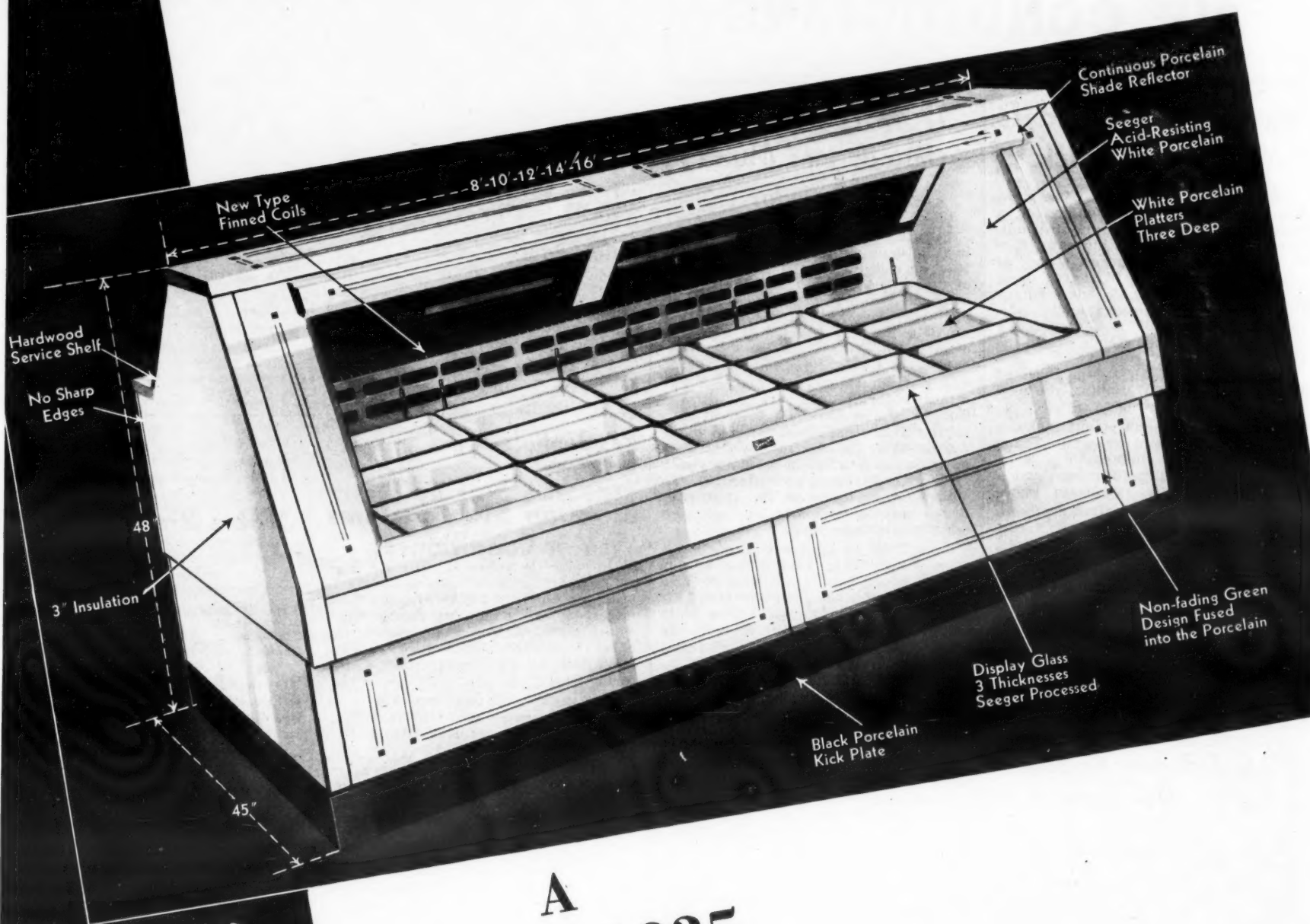
CLARKSBURG, W. Va.—Several hundred persons attended the annual refrigeration and electrical appliance shows held here and at Parkersburg recently.

Local dealers had individual refrigeration displays at the Parkersburg exhibit. A mass outlay of washers, ironers, and small appliances built around a revolving bar occupied the entire space at one end of the building.

Sargent Joins Sales Staff Of Allen-Bradley

PHILADELPHIA—Claude O. Sargent, for the past five years district sales manager of the Pittsburgh office of the Louis-Allis Co., was recently appointed to the sales staff of the Philadelphia office of the Allen-Bradley Co., Milwaukee, manufacturer of control equipment.

Mr. Sargent has been associated with a number of electrical manufacturing companies in a sales engineering capacity.



Series
6

A 1935 Display Case by Seeger Saint Paul

Series 6 . . . an innovation in Display Case Design and Construction, originated by Seeger.

Three Platters Deep

Unusual Depth . . . Unusual Display. Seeger standards of Quality, Workmanship, and Materials built into each case.

Series 6 Display Case by Seeger is Right . . . The Time is Right . . . The Price is Right.

Sold through Electrical Dealers and Distributors.

Ask for complete Details.



Seeger Refrigerator Company

Saint Paul, Minnesota
Chicago, Ill.
Los Angeles, Calif.
Boston, Mass.
San Francisco, Calif.
New York, N. Y.
Meyer Smith Co., Buffalo, N. Y.
SPECIAL REPRESENTATIVES
Seeger-Philadelphia, Inc. Philadelphia, Pa.

AIR CONDITIONING

Hamburger Stand Is Cooled by Frick

CHICAGO—Combination of a giant hamburger, served with onions on a large toasted bun, and an air-conditioning system are the big attraction at a glorified hamburger stand at 64 West Washington St. here, operated by D. J. O'Connell, who owns a similar one on Chicago's north side, and who also owns and operates a string of hamburger stands known as the "White Tower System."

An estimated \$25,000 was invested in furnishing and equipping the new restaurant, which seats 56 people.

Air-conditioning equipment includes a 10-hp. Frick Freon unit, two Trane double-row finned surface coils, 24 in. by 48 in., with solenoid valves, and a 10-ton thermostatic expansion valve.

Air-conditioning installations containing 10 or more pounds of Freon, made within the Chicago city limits, are required to have leak alarm devices, arranged to ring a bell when as much as 10 lbs. of refrigerant has escaped from the system. This has been included in the installation.

The plant, when operating in conjunction with the ventilating system, maintains a temperature of 80° F. and a relative humidity not to exceed 55 per cent, when outside conditions are 95° dry bulb and 75° wet bulb.

75 G-E Burners Ordered For L. I. Development

BROOKLYN—An order calling for delivery of 175 General Electric oil burning furnaces during 1935, with an option on 25 additional furnaces, was placed with Gene Meenan, Inc., dealer here for G-E air-conditioning equipment, by Levitt & Sons, builders and developers of the Strathmore Estates at Manhasset, L. I. The furnaces will be standard equipment for all new houses built on the property.

17 Air-Conditioning Installations Made In Toledo

TOLEDO—The 17 air-conditioning installations made in Toledo during 1934 exceed by 10 the total number of installations of air-conditioning equipment reported during 1933 and years previous, according to a survey made by Ralph E. Paxton, power sales department, Toledo Edison Co.

It is interesting to note that only one air-conditioning installation was reported during 1933, a 3-hp. installation in a mortuary. Of interest also is the fact that installations made during 1934, for the most part, were in fields not touched in previous years. No installations, according to the survey, were made in the industrial field, theaters, or banks, as had been done in previous years.

According to figures compiled, the most outstanding gain made by air conditioning last year was in the residential and office field. During 1934 eight residences and six offices were equipped with air-conditioning, whereas prior to 1934 no installations of that nature had been reported.

Two mortuaries were air conditioned as compared with one in previous years. Air-conditioning business in the hotel field held its own—one installation in 1934 as against one in previous years, although no hotels were air-conditioned in 1933.

A system with a connected load totalling 30 hp. was installed last year in the Secor hotel. Eight residences were reported as installing systems totalling 13 hp., and six offices as totalling 9 hp. Installations for the two mortuaries in 1934 totalled 13 hp., as compared with the one 3-hp. installation made in 1933.

Table 1 shows where air conditioning has been installed in Toledo and table 2 is a summary of Toledo air-conditioning installations.

Table 1—Where Air Conditioning Has Been Installed in Toledo

Customer's Name	Year Installed	Description of Equipment	Refrigerant	Tons	Cooling Capacity Hp.	Total Hp.
Commercial						
Paramount Theater	1929	Carrier	Carrene	260	300	490
Rivoli Theater	1931	Sturtevant	.....	180	300	380
Ohio Building	Not Used					
Banking Quarters	1930	Brunswick-Kroeschell	Carbon Dioxide	175	225	268
Secor Hotel	1934	Avery Engineering	Well Water	15	30	30
Bar Room		Carbondale	Freon	10	..	..
Commodore Perry Hotel Coffee Shop	1930	Carrier	Carbon Dioxide	28	40	57
Boyer Mortuary No. 1	1934	Frigidaire	Freon	10	10	10
Boyer Mortuary No. 2	1934	Frigidaire	Freon	3	3	3
Abele Mortuary	1933	Westinghouse	Freon	3	3	3

Industrial

Toledo Synthetic Prod. No. 1	1930	Clarage Fan	Well Water	..	30	55
Toledo Synthetic Prod. No. 2	1935	York	Freon	5	7½	7½
Libby Owens Ford Glass Co.	1928	Carrier	Carrene	80	100	150

Individual Offices

Six Offices	1934	3 Westinghouse 2 Frigidaire 1 General Electric	Freon Freon Freon	1 (average)	..	9
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Residential

Eight Residences	1934	7 Frigidaire 1 Westinghouse	Freon Freon	1 (average)	..	13
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Baraban Manufactures Air Conditioners

KANSAS CITY—Copeland Refrigeration Co., distributor here, has moved into a two-story building in an expansion move which encompasses its entry into the manufacture and installation of air-conditioning equipment.

The new quarters provide four times the space that the company formerly had at its 1922 Grand Ave. headquarters.

Air-conditioning equipment which the company will make and sell was developed by Nathan Baraban, head of the company, and Maurice Olchoff of the Olchoff Engineering Co.

An affiliated concern, American Cooling Towers, is also located in the new building. Mr. Baraban, the president, and E. R. Hopkins, vice president, recently developed a cooling tower which may be installed in the interior of a building, a type claimed to be particularly suitable in the semi-arid territories in which sand and dust storms occur frequently.

Table 2—Summary of Toledo Air-Conditioning Installations

Type of Establishment	Prior to 1933 No.	Prior to 1933 Hp.	During 1933 No.	During 1933 Hp.	During 1934 No.	During 1934 Hp.	Total Thru 1934 No.	Total Thru 1934 Hp.
Theaters	2	870	..	..	..	..	2	870
Banks	1	268	..	..	..	..	1	268
Hotels	1	57	..	..	1	30	2	87
Mortuaries	..	..	1	3	2	13	3	16
Offices	..	..	..	..	6	9	6	9
Residences	..	..	..	..	8	13	8	13
Industrial	2	205	..	..	..	..	2	205
Totals	6	1,400	1	3	17	65	24	1,468

Year-'Round System To Condition Kline's Store for Women

CINCINNATI—As part of an extensive program of remodeling and modernization, Kline's department store for women here is installing a complete year-'round York air-conditioning system to serve its entire nine upper floors and basement. The store is expected to be open for trade early this month.

Decision of the management to air condition the building was based on experience with Kline's St. Louis store, where an air-conditioning system has been in operation for the past two years.

Freon Water-Cooling System

The air-conditioning system embraces a York Freon water-cooling system of 150 tons refrigeration capacity, installed in the sub-basement. This equipment supplies cold water which is pumped to finned coil air conditioners located on each floor. These condensers cool, dehumidify, and filter the air, in addition to introducing fresh air from outside.

Each air conditioner has a distributing duct for supplying air to all of the sales areas and stock rooms on each floor. Special care was taken in designing and installing the ductwork to avoid impairing the attractiveness of the building's interior, grilles with a special finish being supplied to conform with the decorative scheme on each floor.

Individual Control

Each floor in the building has its own individual temperature control of the differential type. This regulates the inside temperature in the summer, according to temperature variations outside, and avoids undue shock to people entering or leaving the building.

Operation of the refrigerating equipment is also automatic, with one of the compressors arranged to start and stop as required by variations in the air-conditioning load. Automatically controlled heating is provided for the basement, first floor, mezzanine, and second floors.

A large fur storage vault, located in the sub-basement, is also refrigerated by York equipment, and a new drinking water system for all 10 floors of the building is now being installed by the same manufacturer.

The installation was carried out under the supervision of A. Winther, air-conditioning manager of Cincinnati branch of York Ice Machinery Co.

Air-Conditioned Diners Serve Larger Meals

PHILADELPHIA—Equipped with air conditioning, dining cars on the Pennsylvania railroad did more business last summer than for several previous summers, officials of the company have declared. Change in the eating habits of the passengers showed a preference for dishes usually associated with winter. Sketchy summer-time lunches of salads, sandwiches, and ice drinks gave way to full course meals with soups, steaks, vegetables, pastries, and tea or coffee.

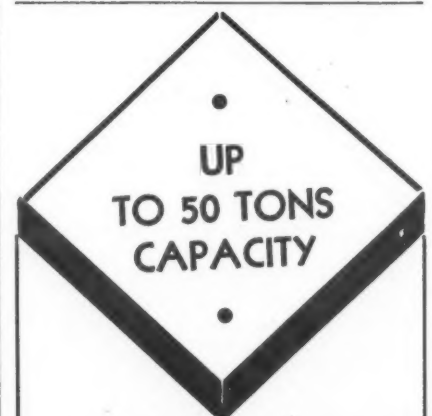
Ilg's New Literature Tells of Application Of Air Conditioning

CHICAGO—Two new bulletins were recently issued by Ilg Electric Ventilating Co. of this city—one dealing with the Ilgair cooling and air-conditioning system for stores, restaurants, offices, etc.; and the other with the Ilgatic system for the home-cooling field.

The Ilgair bulletin portrays some 21 installations of air-conditioning equipment in candy stores, nut shops, wearing apparel shops, beauty parlors, restaurants, business offices, airplanes, theaters, lithographing offices, and hospitals.

Testimonial letters and equipment are also listed. Ilg Spot Coolers, cabinet-type units, and ceiling-type units are described and illustrated.

The Ilgatic bulletin explains the cooling and ventilating system and the advantages of attic-cooling and of ventilating homes and apartments. Details of residence installation and apartment installation are diagrammed and explained. Specifications are given so that the size of the Ilgatic system required may be estimated. Register sizes are also discussed briefly.



FREON UNITS FOR AIR CONDITIONING

Contractors who sell "Reliance" are never handicapped because of a limited capacity range of condensing equipment. Even fractional tonnage units are available. Investigate why "Reliance" offers greater value in compact, trouble-free plants.

Reliance Finned Coils Galvanized, hot dipped after assembly, giving metal to metal contact and exceptional high conductivity.

RELIANCE REFRIGERATING MACH. CO. 3409 N. Kedzie Ave., Chicago
Export: A. J. Alsdorf Corp. 223 W. Jackson Blvd., Chicago, Ill., U. S. A.
Cable: ALSDORF-CHICAGO



YOU'LL KNOW WHY...

IF YOU TAKE ONE APART

• You'll know why every customer, to whom you sell a York machine, will be satisfied with its performance... why it will give him uninterrupted service year in and year out... why operating and maintenance costs will be low. Then, too, you'll know why one York machine always sells another... why every York job will help you build good will, sales and profits. And when you study York's complete line of Commercial Refrigerating and Air Conditioning units you'll also know why York distributors and dealers are always able to offer the correct system for each job... correct as to capacity... correct as to type. It will pay you to get the facts on York equipment... product of an organization that has been building commercial and industrial refrigeration for the past half century.

The coupon is attached for your convenience. Use it to secure more detailed information. There is still time to cash in on a York franchise this season.

YORK ICE MACHINERY CORPORATION, YORK, PA.
Commercial Division
Please furnish more detailed information on a York franchise. I am interested in
☐ YORK COMMERCIAL REFRIGERATION
☐ YORK AIR CONDITIONING

Name _____ City _____
Firm Name _____
Street _____

REFRIGERATION **YORK** AIR CONDITIONING

470 Refrigerators Sold in First 11 Days Of Hudson's Spring Show

By T. T. Quinn

DETROIT—Hudson's seventh annual Refrigeration Show, held March 26 to April 13, resulted in sales of 600 electric refrigerators, reports J. B. Ogden, manager of the store's electrical appliance department. During the first 11 days of the show, to April 10, 470 refrigerators were sold. Total sales for the 1934 show, held May 2 to 19, were 449 units.

The J. L. Hudson Co., Detroit's largest department store, is finding 1935 electric refrigeration business nearly 60 per cent better than in 1934, declares Mr. Ogden.

Eighty-eight models of eight makes—General Electric, Frigidaire, Kelvinator, Leonard, Norge, Westinghouse, Grunow, and Hudson's—were on display.

Second Major Showing

This was Hudson's second major showing of electric refrigerators this spring, in addition to the Housewares Exposition last January. The store's regular introductory display of new models was held this year from March 6 to 16, during which period 189 refrigerators were sold.

For the Refrigeration Show, Hudson's spotlighted attention of all store visitors on its tenth-floor electrical appliance department, scheduled a number of well-known home economists as lecturers in its Home Advisory Service Bureau, directed by Mrs. Jessica Meek.

Several days before the show's opening, 3,500 mailing cards were handed out among the store's 27 salesmen for distribution to their best prospects. Approximately 60,000 more announcements of the show and invitations to attend it went out in the form of package-stuffers to the store's customers in Detroit and suburbs.

Publicizing Methods

Extensive newspaper and radio advertising also served to whet public interest in the show. Posters calling attention to the event were spotted at various locations on the ground floor, and two large window displays were maintained throughout the event. Two additional display windows were used to advertise the special basement sale of 1934 refrigerators, held while the show was in progress.

Photostatic blowups of newspaper advertisements were posted on the bulletin boards of all employee locker rooms in the store and warehouse, to build up employee interest and promote sales in that classification.

Appearance of the refrigeration department was changed by decorating posts and panels with vari-colored metallic paper. Amber-screened spotlights were placed at various points in the section, to brighten the display, and ceiling light coverings were also changed.

Shadow Boxes Used

Shadow boxes were built as the centers of the Frigidaire, Kelvinator, and General Electric displays, and decorative foliage softened the appearance of the entire department, giving it a holiday air.

Pepping up the appearance of the department for an event of this sort, Mr. Ogden believes, is as valuable in its effect on salesmen as on customers.

"Most of the time," he said, "our salesmen do their own decorating. For an event of this kind, however, we changed the usual procedure, and let the store's decorating department handle the work."

"When the salesman comes down to work the first day of the sale, the added decorations are as much of an innovation to him as to the customer. He gets the idea that something special is being done—and his sales will reflect the added enthusiasm he puts into his work."

Evidence that Mr. Ogden knows whereof he speaks is furnished by the sales figures for individual days, which show the largest number of units, 103, was sold the first day of the showing.

Sales Contest Staged

Salesmen were given unit and dollar quotas for the period, and a sales contest, covering 16 days, was conducted, with prizes of \$10, \$5, and four \$3.95 sales portfolios to the six leading producers. Salesmen were furnished with their 1934 model sales records for comparison.

All the store's salesmen, including the 10 in the G-E resale operation maintained there, were kept on the floor throughout the show. Thirteen refrigerator-washer men were stationed in the tenth floor department, and four in the basement refrigerator department.

Eight additional salesmen were transferred to the basement store for the special selling of 1934 models, which opened on the Saturday before the regular show, and which resulted in sales of 130 units.

No new salesmen were added to the regular Hudson sales force for the event.

This year's show, Mr. Ogden said, was scheduled a month ahead of its

1934 counterpart, because the 1935 buying season seems at least that far ahead of last year. Month-by-month records show that in January, Hudson's doubled its 1934 sales for that period, with four to spare; in February, the store fell 25 units short of doubling its 1934 mark; and in March, the store sold twice its 1934 figure, plus 30.

Price Not Featured

Salesmen, too, are finding a considerable switch in the buying mind this season over last. As one of them said:

"It's seldom necessary to talk price to a prospect any more—that is, we don't have to feature it in our presentation. Most people seem convinced of the desirability of owning an electric refrigerator. Our job is to stress the convenience features, styling, and beauty of the model we find they're most interested in having."

Approximately 80 to 85 per cent of Hudson's electric refrigerator sales this spring have been on the time payment plan. The store maintains a liberal credit policy, with as little as \$5 down on refrigerators selling up to \$131.50, and as long as 24 months to pay, with one-half of 1 per cent carrying charge per month.

Average price of the refrigerators sold has ranged between \$165 and \$170, indicating that the preference of most Hudson buyers is in the 5 and 6 cu. ft. sizes.

Service Bureau Aids Sales

Mr. Ogden believes the store's Home Advisory Service Bureau is a major factor in bringing prospects to the store's tenth floor salesroom, as well as in sharpening their desire to own an electric refrigerator. The bureau played an important part in this year's show.

Miss Polly Peacock, director of Kelvin Kitchen for Kelvinator Corp., was guest lecturer during the first week of the show. She was followed by Miss Edna I. Sparkman, director of home economics for Westinghouse, who gave suggestions for "Smart Salads and Desserts." Last lecturer during the show was Mrs. Lois Baker, home economist with Caswell, Inc., Michigan G-E distributor.

In these programs, held every afternoon throughout the show, kitchen activities revolved about the electric refrigerator.

Mr. Ogden is a firm believer in special selling days as a most effective means of merchandising electric refrigerators, or any electrical appliance. Hudson's 1934 results back up his contention. During the 42 special selling days last year, 42 per cent of the store's 1934 refrigerator sales were recorded.

Indiana Passes State Recovery Act

INDIANAPOLIS—An Industrial Recovery Act for Indiana has been approved and will be in effect until March 31, 1937, unless before that time the National Industrial Recovery Act shall become inoperative, in which case the provisions of the Indiana act likewise become inoperative.

Under the act, in the absence of a National code, a State code can be approved by the State Code Commission, but the act also provides that every State code shall conform to the corresponding National code on all matters which are the subject of the provisions of the National code.

The act provides that National Codes of Fair Competition shall be effective as State codes, upon approval and public proclamation of the Governor. Violations of the act are made a misdemeanor, with a penalty of not more than \$500 fine for each offense, and each day a violation continues shall constitute a separate offense.

Any person affected—the code authority, the attorney general, or any prosecuting attorney—may institute suit to prevent and restrain any violation of the act. Prosecution for violation of the act must be brought by the attorney general or by the various prosecuting attorneys of the state.

While a National or State code is in effect any action thereunder in Indiana is exempt from the provisions of the Indiana anti-trust laws.

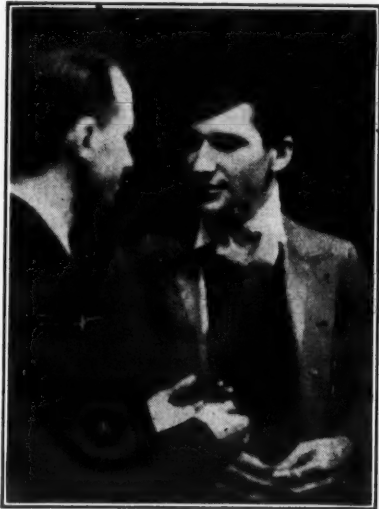
In bidding on State work a compliance certificate, similar to that required by Executive Order 6646, is required.

Jones Opens Third Crosley Store in Ft. Worth

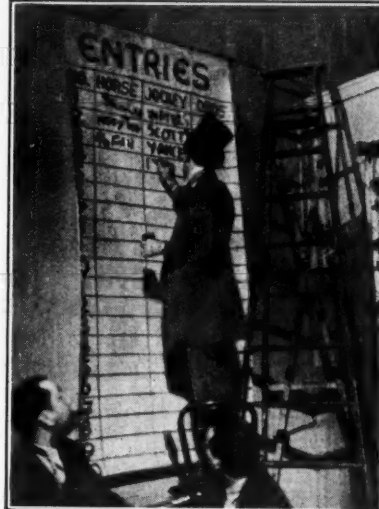
FT. WORTH, Tex.—T. C. Jones Co., Crosley dealer, recently opened its third store in this city.

Sales of Crosley electric refrigerators made by this firm are approximately 300 per cent ahead of those made in 1934, reports T. C. Jones. During March alone 15 more refrigerators were sold than in the first three months of 1934, Mr. Jones states.

'Nagging' the Salesmen



(1) Harry Warren (facing camera), sales promotion manager for Caswell, Inc., Michigan G-E distributor, explains the "Refrigerania Sweepstakes" to a salesman. (2) Mr. Warren posts "odds" on the salesmen-entries.



St. Louis Paper Issues Refrigeration Section

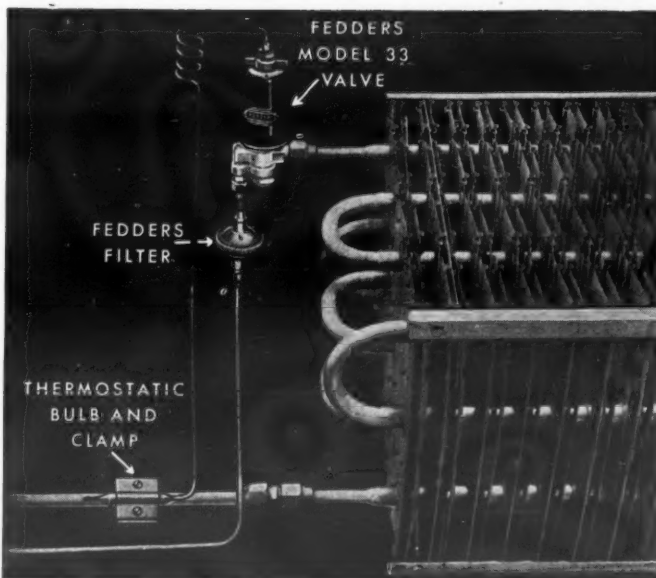
ST. LOUIS—The first annual electric refrigeration section of the St. Louis Star-Times, numbering 16 pages, was published as a part of the March 29 issue of the daily newspaper.

The electric refrigerator industry

was used as the basis for a special news and advertising section, comparable to the automobile numbers.

Pictured on the front page of the section, under the heading "New Electric Refrigerators Described in This Section," are Grunow, Norge, Westinghouse, Stewart-Warner, General Electric, Coldspot, Kelvinator, Crosley, Spartan, Fairbanks-Morse, and Leonard.

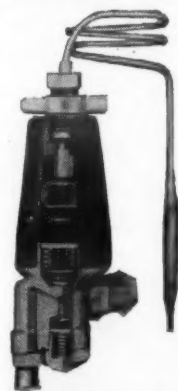
I am on the Carpet if one Comes back—



U. S. Pat. 1,869,174

FEDDERS COMPLETE LOW SIDES

You get a Complete Low Side when you standardize on Fedders Evaporators



U. S. Pats. 1,974,631; 1,987,948

with FEDDERS
Model 33
THERMOSTATIC
EXPANSION
VALVES

Unusually easy, sensitive adjustment gets the most out of both the low side and the high side on single and multiple systems.

Prompt Delivery from Fedders Factory Branches and Distributors

FEDDERS MANUFACTURING CO.

57 Tonawanda St.

Buffalo, N. Y., U. S. A.

106 E. 19TH ST.,
NEW YORK

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BLVD., CHICAGO

303 E. 6TH ST.,
CINCINNATI

209 S. PEARL ST.,
DALLAS

923 E. THIRD ST.,
LOS ANGELES

ARE YOU GETTING YOUR COPY OF THE FEDDERS NEWS?

South African Cities Have Payment Plans

DETROIT—Sales of electric household equipment are steadily increasing in South Africa, according to advices to the Commerce Department from its Trade Commissioner at Johannesburg and made public by Richard Stephenson, district manager of the Detroit office. This trend, he points out, is strikingly indicated by the most recent record of stove, refrigerator, and water heater sales.

A number of factors have led to the increased popularity of electric appliances in this market, the most influential, being the adoption of assisted purchase schemes by municipalities. Substantial sums have been provided for and used by these deferred payment schemes.

Durban and Capeton are the outstanding centers of development, but Johannesburg has advanced rapidly during the past two years and the large number of ranges and refrigerators being installed in newly erected apartment buildings is certain to add greatly to the present number of connections.

The electric range market in South Africa is dominated by Canadian products, but the electric refrigerator market is served mainly by the American manufacturers, the report says. Annual imports of electric refrigerators into South Africa amount to approximately 14,000 units. There are approximately 15 makes of American electric refrigerators sold in South Africa at the present time.



It's easy to think of production as "volume", but here at Fedders we think of production in terms of QUALITY. It is my responsibility to see that every product is built RIGHT, and believe me, I am on the carpet if one comes back.

J. B. McLaughlin
Superintendent
Electric Refrigeration Division

**How FEDDERS
NON-FROST COILS
are built to satisfy men
who know their
refrigeration**

You can't fool a B.T.U. when it comes to heat transfer efficiency, and refrigeration engineers know it. These Fedders advantages have been proved and approved by years of actual service in the field—

Copper Fins and Copper Tubes
Metal-to-Metal Contact
Elimination of Electrolysis
Thorough Cleaning and Dehydration
Silver-Satin Finish
A Complete Line with Flat or Fluted Fins
For use with all refrigerants including Ammonia

Write for Bulletins 40-B and 40-S and standardize on Fedders.

ELECTRIC REFRIGERATION NEWS

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VOL. 14, No. 16, SERIAL NO. 317, APRIL 17, 1935

More Safety Code Meetings in Prospect

ACCORDING to reports, a new series of safety code meetings is in the offing. While the NEWS has not been officially informed regarding the proposal, we understand that A. R. McDonegal, inspector of plumbing at Washington, D. C., has suggested that officials of New York City, Chicago, and Detroit hold sessions in each city for another effort to arrive at an agreement upon the details of a code which will be acceptable and enforceable. Present codes, it appears, cannot be enforced.

It is believed by the sponsor that if regulations could be drawn up which would be acceptable to these four cities, that the code would ultimately be adopted by the American Standards Association and eventually become a national standard. This brings up the question as to the status of the code proposed by the American Society of Refrigerating Engineers. From the viewpoint of the A.S.R.E., it is probably unfortunate that this society did not succeed in attaining acknowledged leadership in the matter of a refrigeration code since now, with the prospective development of air conditioning, it is possible that other organizations such as the American Society of Heating and Ventilating Engineers may become rival claimants for the position of authority.

Ever since 1929, when Dr. Arnold Kegel, then health commissioner of Chicago, threw the industry into a turmoil with his famous series of public hearings, engineers and public officials have been trying to produce a satisfactory refrigeration safety code.

No one will deny that the problem is bewilderingly complicated. It has been recognized from the beginning that it would be difficult to get competitive manufacturers to agree, since any kind of a code is almost sure to work out to the advantage of some manufacturers of equipment, materials, and supplies, and set up a competitive handicap to others. Whatever specifications are drawn, or whatever tests may be imposed as the yardstick for safety, the inevitable result is that somebody gets an edge in the competitive battle; and smart salesmen are quick to make use of such opportunities.

Because of this very obvious situation, the representatives of manufacturers who take a hand in the formulation of codes often hear the charge that "selfish interest" is being injected into the consideration of public safety. Yet manufacturers have learned that they cannot sit by idly and permit self-appointed committees to draw up regulations, which may later be enacted into municipal ordinances, when such legislation may very effectively put the manufacturer out of business so far as that community is concerned.

Executives have simply found it necessary to look after their own interests, since adverse legislation may be just as harmful—whether it has been instigated by a scheming enemy, or is

passed merely because of an over-sight on the part of an honest but tired committee.

So-called "selfish interest" is not limited to manufacturers by any means. There are numerous other conflicting forces which tend to gum up the proceedings. Most noticeable at the original Chicago hearings was the scramble for advantage by the spokesman for various trade unions, and the jealousy between departmental officials in the city hall.

With the widening of the battle front, other "interests" have been affected—including the rights and prerogatives, as well as the dignity, of various professional and trade associations. With all of this welter of divergent interest (along with a full measure conscientious difference of opinion and experience) it is not at all surprising that someone arises occasionally at a code meeting to remind the assembly that the real purpose of the proposed code is to protect the safety of the public.

Fremont Wilson used to "represent the public" quite regularly at code meetings, much to the irritation of the embattled codifiers, but adding greatly to the entertainment value of code meetings for the gallery. Several very good engineers have come out second best in arguments with Wilson on the floor of code meetings. His earnest opponents probably did not know that Wilson was for many years, during the early days of the electrical industry, chief inspector representing the insurance companies of New York City. It is said that he has withstood many merciless cross-examinations in court-room litigation resulting from his condemnations. Incidentally, he was at one time general manager of the old Madison Square Garden, back in the rough and tumble days.

Engineers who are continually puzzled at the appearance of Fremont Wilson at code meetings in various parts of the country should consider the plausible theory that he is just a natural born fight-fan who knows all of the rules forwards and backwards, and who will travel miles just to see a good scrap.

So it has frequently happened that when all of the "selfish interests" had battled themselves into a compromising frame of mind and were on the point of agreement to some kind of a code which provided reasonable assurance to competitors and aspiring politicians alike, that the old white-haired man from New York would arrive on the scene to "represent the public." And if anyone dared challenge his right to speak, the old gladiator could usually throw enough "dead cats" into the arena in five minutes to precipitate a riot and bust up the meeting.

Having listed the "selfish interests" of manufacturers, the pugnacious union leaders seeking to protect the rights of down-trodden plumbers and steamfitters, the publicity-loving politicians battling for control of "inspection" privileges, and some degree of professional jealousy between national and local associations, together with Fremont Wilson doing a single handed job of guarding the women and children—the code makers have had still other troubles to muddle up their wherefores and whereases.

Probably the biggest stumbling block of all has been the prodigious growth of the refrigeration business, and the progress of engineering development. Codes have actually become obsolete during the process of discussion. Most of the dangers which were foreseen a few years ago have faded into thin air. Precision manufacturing, greatly improved valves and fittings, better castings, and, in general, more efficient production, installation, and servicing—together with the enormous popularity of individual units (rather than multiple systems)—have simply eliminated most of the safety hazards.

While the prospect for the widespread use of air-conditioning equipment has given a new impetus to the demand for codes, here again new developments are continually changing the picture. The availability of Freon, for example, has practically limited the refrigerant safety hazard to one condition (an accident which would release the refrigerant into the presence of an open flame).

As far as the NEWS is concerned, we have never attempted to pass judgment upon any refrigeration code. We have asked only that we be permitted to attend the meetings and report what happens.

LETTERS

1935 Directory Completed

The Electric Furnace Co.
Salem, Ohio

Editor:
Will you kindly advise about when you expect to have the 1935 DIRECTORY AND MARKET DATA BOOK ready for distribution.

A. E. WRIGHT,
Advertising Manager.

Knickerbocker Ice Company
41 East 42nd St.
New York, N. Y.

Editor:
We have not yet received our copy of the REFRIGERATION MARKET DATA BOOK for 1935. Will you kindly let us know when we may expect this volume.

R. C. HILL, Mgr.
Refrigerator Dept.

Answer: The 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY, containing 380 pages, has been mailed to all paid-in-advance subscribers. The second volume of the set—the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK will be completed in two or three weeks.

Specifications Errata

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

Editor:
On March 20 we acknowledged your request by returning the questionnaire completely filled in. Unfortunately there has been a serious error when this data was reproduced in your March 27 issue, page 10. You state in this data that the Westinghouse self-contained Mobile unit has a 2 1/4 hp. rating where this should be 1/2 hp.

I believe where the mistake occurred was that the form stated two 1/4 hp. motors. In other words, as an explanation our self-contained unit is hermetically sealed, having two separate compressors welded together each having a 1/4 hp. rating, making a total of 1/2 hp.

From a competitive angle this certainly throws us way out of line. I am wondering if it would be asking too much if you would run a correction of this in an early issue of your valuable paper.

S. F. MYERS, Manager
Air Conditioning Sales.

Sure, We'll Be Responsible

Periodical Publishing Co.
Grand Rapids, Mich.

Editor:
We have seldom seen a finer job of newspaper reporting than that of George Taubeneck in your issue of March 13 in connection with Macy's bootlegging operations. We would like very much to have the privilege of reprinting this story in our publications with full credit, and incidentally responsibility placed upon ELECTRIC REFRIGERATION NEWS. We propose to reprint under a lead reading as follows:

"I'm Asking You? . . . 'Is there no Safeguard for The Decent in Business?'"

"This publication dedicated to the advancement of all that is legitimate—creative, timely in the furniture industry, fully believed no more mental shocks could assail its editorial staff."

"We were mistaken, because the following is national in influence, and outrages the first principles of good business, good ethics, and business integrity, for those reasons and only those reasons, it is presented to the furniture industry. We have maintained for two generations that the business organization or business executive responsible for stealing a design, or for breaking any legitimate business safeguard, is morally guilty of one of the most destructive crimes to themselves, and society, that greed or cunning could evolve."

"That requires no elaboration. You judge, whether the following belongs—or does not belong in that category." Barkis is willin'. Are you?

J. N. NIND, JR.,
President.

Refrigeration Week

California Refrigerator Co.
1077 Mission St., San Francisco

Editor:
Because Electric Refrigeration Week should be a national affair or international, if you please, your well edited and interesting publication should be the one to promote this worthwhile and profitable event. I suggest that it be early in the season rather than late in the fall to encourage the sale of refrigerators in late spring and summer time.

In California we have accomplished wonders by having Canned Fruit Week, Orange Week, Walnut Week, Automobile Shows, etc.

I will be glad, if I am the right person, to help you promote this Refrigeration Week in the 11 western

states. More power to Refrigeration Week, your paper, your camera, and yourself.

CLARENCE F. (SANDY) PRATT,
President.

Too Late!

Specialty Sales Co.

118 South Queen St., Lancaster, Pa.
Editor:

We are setting up a complete installation and service station on domestic and commercial refrigeration, the above to include all types of low and high pressure machines.

We are distributors in this territory for the York Ice Machinery Corp. If you have any special form, we will appreciate it if you will kindly send it to us, insofar that we would like to be registered as per above in your new DIRECTORY.

SPECIALTY SALES CO.

Answer: The 1935 REFRIGERATION DIRECTORY has already been printed, and no additions to the lists can be made until the next edition.

Take a Sock at Bill?

Norton, Va.

Editor:
Of course we all form opinions—sometimes correct ones—and I'm wondering if my opinion of your journal is correct in assuming that you have "your price." It is my opinion that you would delight in taking a sock at Bill Grunow—or put it another way! You'd rather favor other manufacturers against him because he doesn't pay you so well. Unquestionably, you're a sell out. Maybe we all are. It's also my opinion that you're a little prejudiced.

But, Georgie, another opinion I have is that the Grunow refrigerator may command an important position before long. So long.

A. C. McCLURE.

Canadian Sales Data

Kelvinator of Canada, Limited
London, Ontario, Canada

Editor:
I have your form letter of the 28th, enclosing a questionnaire which, of course, we are not able to fill out because we are not distributors but manufacturers of electric refrigeration here in Canada.

I am wondering if you expect to segregate the information regarding Canada from the United States information. If you do I shall be very much interested in cooperating with you in any way I can. Please advise me.

C. W. HADDEN,

General Manager.

Answer: We would be much interested in obtaining separate statistical information for Canada. The Refrigeration Division of the National Electrical Manufacturers Association (Nema), in their monthly bulletins, break down shipments to distributors and dealers into United States, Canadian, and foreign. This information does not include refrigeration equipment produced in Canada.

If at all possible, we should like to obtain the total number of household electric refrigerators, made by manufacturers operating in Canada, sold to distribution outlets during 1934.

We are also interested in getting this same information for commercial condensing units.

Whatever sales statistics from Canadian manufacturers for household electric refrigerators, commercial condensing units, or any special types of commercial applications, such as water coolers, ice cream cabinets, and room coolers which may be available will be more than welcome at this office.

Air Conditioning Survey

The Bryant Heater Company
17825 St. Clair Avenue
Cleveland

Editor:
I have been very much interested in your analysis of air-conditioning installations in the various cities. I have been holding two or three of your issues containing these reports, with an expectation of photostating them and sending them out to a few of our branch offices.

It occurs to me that this information is valuable enough to be a text and reference book, and I am wondering if you intend to print a summary of these installations after you have run the series of stories. If so, we would purchase such pamphlets.

C. L. REILLY.

Answer: Data on installations in some 35 major cities will be published in the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK, which will be ready soon.

The MARKET DATA BOOK is Volume II of the Refrigeration Library. Volume I is the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY, which is off the press and is now being distributed.

"Enclosed please find check for \$6.50 for which extend my subscription for ELECTRIC REFRIGERATION NEWS for one year and send me the REFRIGERATION DIRECTORY."

"I do not see how anyone interested in the refrigeration business can get along without these publications."—E. A. Reeves, The Reeves Engineering Co., Milford, Conn.

LETTERS

Opening in Australia

W. A. Auto Products Co.
New Zealand Chambers,
105 St. George's Terrace
Perth, W. A.

Editor:

Being extensively connected with the refrigeration business in West Australia, we take this opportunity of soliciting your help and advice in our endeavor to secure direct agencies covering the whole of the refrigeration sphere in this state.

Refrigeration has wonderful possibilities in Western Australia, but the trade is somewhat hampered at the present moment, due to the fact that most lines have direct agencies in either Sydney or Melbourne, and are distributed in this state through sub-agencies, this position bringing about quite a deal of dissension among local traders, due to excessive costs, brought about by this uneconomical state of affairs.

The point of view which we consider would be advisable to point out to American manufacturers, is that Perth, Western Australia, is situated at least 3,000 miles from either Sydney or Melbourne, also there is a distinct possibility in the near future, of Western Australia securing Secession from the Commonwealth.

In running through your publication, agencies such as the following, we would be interested in: Detroit Lubricator Co., Commonwealth Brass Corp., Mueller Brass Co., The Automatic Reclosing Circuit Breaker Co., The Automatic Products Co., The Commercial Coil & Refrigeration Co., Henry Valve Co., McCord Radiator & Mfg. Co. We give the above as an indication of the particular type of agencies required, and trust you will be able to pass on our inquiries to the refrigeration trade in general.

We are prepared to negotiate business on terms, cash against documents.

Trade reference, Bank of N.S.W. Perth, Western Australia.

MANAGER.

Master Service Manual

1688 Lafond
St. Paul, Minn.

Editor:

I am very much interested in your Master Service Manual, and if it isn't included with the attached subscription, please send me a copy C.O.D.

I am an independent service man, having had 16 years' experience with Climax Engineering Co., Clinton, Iowa, and Universal Co., St. Paul.

Right at the present time, I am in need of a service manual, covering Norges, and if this isn't included in the above manual, please advise where I could obtain one.

W. C. LANCASTER.

Answer: We have been trying very hard to find a satisfactory answer to the demand for a Master Service Manual.

We have made arrangements for an increased amount of service informa-

tion to be published regularly in the News. We also believe that we will be able to turn out a really good manual sometime this year, but we are not yet ready to make a definite announcement.

So far, some of the manufacturers have not been entirely favorable to the idea of making full information available to all, and this has delayed our plan to publish a comprehensive book. The manufacturers naturally do not care to encourage competition to their authorized service stations, but it appears that their own service men want data on other makes and that the exchange of information would be advantageous. Also, there are many small communities where authorized service for each make is not practical and where combination independent service men are the only answer to the problem.

We appreciate your interest.

Spring Valley, N. Y.

Editor:

For the love of Mike, hurry that Master Service Manual, we are waiting patiently.

Please consider this as my order and send me a copy as soon as it is off the press. Send c.o.d. and send bill and I will remit check.

VINCENT J. RUCKLE.

Electrical Appliance Shop
4738 Prospect, Kansas City

Editor:

We understand you are compiling a service manual.

We would appreciate further information on this as soon as possible.

F. FUNK,
Service Manager.

1811 Walnut St., Philadelphia

Editor:

I received your address from Melchior Armstrong Dessau Co., refrigeration dealers here in Philadelphia. I asked them for a service manual on electric refrigeration. I work as an engineer for an outfit with all makes of electric refrigeration, such as water-cooled Frigidaires and Kelvinators, and have to service them.

Mr. Melchior Armstrong told me that you have published a book, a service manual, for all kinds of electric refrigeration, domestic and commercial, and which is written so that everybody can easily understand it. What is the price of this book, and is it sold here in Philadelphia?

JOHN FRICKERT.

Official Radio Service Men's
Association, Inc.

1211 Long Ave., Dixon, Ill.

Editor:

I am engaged in radio work here in Dixon, Ill., and am contemplating starting a refrigeration service in connection with my radio service work. Recently while conferring with the Coyne Electrical School of Chicago, Ill., of which I am a graduate, I was informed that you expect soon to publish a "Master Manual" on refrigeration.

I would be pleased to hear from you, informing me as to whether this is true and if so when the same will be available and price of same.

M. A. CRAWFORD.

Nevinger Electric Co.
Greenville, Ill.

Editor:

Enclosed find check in the amount of \$3.00 for our subscription to the ELECTRIC REFRIGERATION NEWS for one year. Please start with the issue of March 13, 1935.

Also please advise if there is available on the market a service data book covering all makes of electric refrigerators.

C. NEVINGER.

21 Greenman Ave., Westerly, R. I.

Editor:

Please send me a sample copy of ELECTRIC REFRIGERATION NEWS and subscription rate to those connected with the refrigeration industry.

Please tell me if you know the name and publisher of an up-to-date book covering the servicing of all makes of electrical refrigerators.

JOHN F. NYE.

22 Mason Pl., Keansburg, N. J.

Editor:

Please send subscription rates and sample copy of the ELECTRIC REFRIGERATION NEWS.

I am also interested in obtaining information on books or publications dealing with the principles of mechanical refrigeration.

FRED M. ROSKE.

Answer: See above.

Selling Power

United Refrigerator Stores
4210 Fullerton Ave., Chicago

Editor:

"Kindly send me the March 20 and other three issues mentioned in your special offer for 25 cents in stamps enclosed, covering specifications of domestic boxes, etc.

"I do not know of any other help that has the selling power of your specification sheets on all makes and have used same since last March to a great advantage. Same helped make sales that were otherwise impossible to obtain."

E. H. MILLER.

BOOKS

How to Run Better Sales Contests

Author: M. Zenn Kaufman. Publisher: Harper & Brothers. Pages: 218. Price: \$3.50.

M. ZENN KAUFMAN summarizes four reasons why a sales contest will increase business in his admirable and exceptionally useful book "How to Run Better Sales Contests" as follows:

1. Men and women would rather play than work, and will play harder than they will work.
2. Men are boys at heart.
3. A change in the scenery or a break in monotony stimulates interest, and all men like a good show.
4. Most men like a good fight at fair odds, and all covet the honor of winning.

Objections of the contest method of selling, according to Mr. Kaufman, boil down to three things: pre-contest stalling; overselling; post-contest slump.

Although a contest is usually thought of as a sales-increaser, the author points out that the principles may be used in the following 16 ways:

1. Selling special products.
2. Selling dealers on advertising tie-ups.
3. Collecting bad debts.
4. Speeding production on a factory line.
5. Reducing errors in production or routine.
6. Building morale.
7. Cutting fuel consumption in motor fleets.
8. Finding new uses for a product.
9. Recruiting personnel.

10. Raising money for charity.
11. Collecting taxes.
12. Avoiding accidents.
13. Training employees.
14. Getting new customers.
15. Stimulating non-selling employees.
16. Getting club members.

"This wide extension of the uses of the contest method is," writes Mr. Kaufman, "another proof of the universality of the underlying principles of the contest idea."

A study of what salesmen think of contests shows the following:

Do salesmen enjoy contests? Yes, salesmen are unanimous in their enjoyment of contests.

Does a contest build up morale? Yes.

Do contests induce more work? Yes.

Are contests fair? Most men think they are. Ninety-five per cent of the men interviewed said that they, individually, had a fair chance to win, and that the others, as a group, had just as good a chance to win. Ninety-seven per cent favor more prizes rather than bigger ones, and shorter contests rather than longer ones are preferred.

The replies of the losers were tabulated separately and found to be substantially the same as the winners.

A contest, says Mr. Kaufman, depends on the following things:

1. Timing.
2. Picking the contest theme.
3. Showmanship.
4. Scoring plan.
5. The follow-up.
6. Prizes.

With regard to these six factors the author makes the following comments:

"Timing. The length and frequency of sales contests can have much to do with their success. Most companies do not run enough contests and run them too long when they do run them."

"Picking the Contest Theme. The theme is the change of scenery and the element of play in your contest."

Old themes are still good when handled in a new way. New themes are needed.

"Showmanship. Showmanship consists of putting life, action, sound, pictures, color, timeliness, personality, and other qualities of human interest into your contest."

"Scoring Plan. The scoring plan is the link between the contest and the contestant. If your scoring plan is no good your contest will fail. The scoring plan must be simple and fair."

"Follow-up. Follow-up is to a contest what persistence is to selling. You simply must have it. Many contests that are launched with great enthusiasm peter out in a short while because of inadequate follow-up."

"Prizes. The right prize is no harder to give than the wrong prize. Study carefully the questions of who should win, what to give, and how to give it. Consider honor, cash, merchandise, and travel. And remember, more important than what you give is how it is given. You must play up your prizes in such a way that every man will want to win them."

The next six chapters are given over in detail to the six factors mentioned above, and are illustrated freely with case histories of actual contests.

Another chapter is devoted to details that help put a contest over, and the final chapter discusses in detail case histories of various campaigns that have been successful in the past.

Dickel Entertains 200 Williams Dealers

PHILADELPHIA—Dickel Distributing Co. here, was host to 200 dealers who handle its Williams Ice-O-Matic refrigeration line, at a meeting held Monday, April 15, at the Bellevue Stratford hotel.

Principal speaker at the meeting was W. R. Marshall, personal representative of C. U. Williams, president of Williams Oil-O-Matic Heating Corp.

400 WOMEN DEFY ZERO WEATHER!

In Town of only
11,000 Population

Brave Snow and Ice
to Attend Leonard
Sound Picture

Four Sales Closed on
Floor—267 Prospects
Listed



THINK OF IT! In weather like this, Jake Kavich, Leonard dealer in Fremont, Nebraska, brought 400 women into his showroom. And 267 of them were actual prospects—interested in refrigeration. And four sales were made at the time on the floor!

In one city of 13,000 it brought 300 women into the Leonard dealer's display room. It drew 125 to another dealer's store in a town of 3,600. It has repeated these results month after month. And it will do the same for you . . . if you give it a chance.

This, and many other sales plans, plus the outstanding new Leonard line for 1935, promise great things for Leonard dealers. So if you're looking for a real, profitable franchise that you can count on . . . and build on . . . learn more about Leonard. Write or wire today for full information. LEONARD REFRIGERATOR COMPANY, 14256 Plymouth Road, Detroit, Michigan, and London, Ontario, Canada. (791)



Perhaps women won't come in carrying a sign labeled, "I'm a prospect for a Leonard Refrigerator," but when they visit Leonard showrooms in response to this remarkable plan, you can count on the greater majority of them being red hot prospects for Leonard. If you'd like more information about Leonard and what Leonard does to help its dealers, write today.



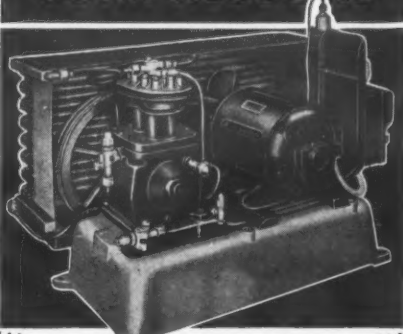
Here you see one of the scenes from Leonard's sound picture, "Your Unexpected Guest." This is only one of four interesting, dramatic sound pictures on which this sensational plan is based. Do you wonder that these entertaining shows make such a hit everywhere? Learn all about them now. Get ready for the big selling season . . . with the Leonard line.

NOW PROSPECTS CALL ON DEALERS



LEONARD shows dealers a new trick. Gets prospects to call on them, instead of wasting valuable time hunting out prospects. Can you afford to overlook Leonard when considering your new refrigeration franchise?

COMMERCIAL AND HOUSEHOLD COMPRESSORS



Ninth Year

A COMPREHENSIVE QUALITY LINE

of Long-Proven Dependability.
Meeting every requirement
of the manufacturer or dealer
in showcases, coolers, milk-
cooling equipment, or air
conditioning apparatus.

1/6 to 10 H. P.

AIR COOLED. WATER COOLED.
AIR AND WATER COOLED

Complete Line of
BARE COMPRESSORS
Service companies and Assemblers
are invited to write for
SPECIAL PLANS.

Catalogs on request

MERCHANT & EVANS CO.
MANUFACTURERS
PHILADELPHIA
EST. 1866 - Plant: LANCASTER, PA.

ADDITIONAL SPECIFICATIONS OF COMMERCIAL UNITS

Curtis

Curtis Refrigerating Machine Co.
St. Louis, Mo.

Compressor—Balanced bellows shaft seal. Cylinder head cooled by air in MAR models; by water in MWR

models. Patented control splash and centro ring lubricating system. Oil level measured by gauge and sight glass. Curtis compressor oil. Viscosity of compressor oil: 150 to 200.

Condenser—Air-cooled models: radiator type. Water-cooled models:

counterflow type. Condenser located outside flywheel.

Liquid Receiver—Horizontal type. Models in range of 1/4 hp. to 10 hp. have fusible safety plug. All models have refrigerant filter.

Materials Used—Cylinder block:

semisteel. Pistons: alloy cast iron. Condenser tubing: copper. Receiver shell: steel.

Controls—Penn pressure control. All water-cooled models have high-pressure cutout. Heater coil overload cutout. Condensing water flow con-

trolled by pressure valve. Penn water regulating valve.

Valves—Wafer stainless steel intake and discharge valves.

Special Features—Condensing units 3 hp. and larger are equipped with oil separators and automatic oil return.

Model No.	40°		Refrigeration		Capacity		-10°		Motor Hp.	No. of Cyl.	Bore & Stroke Inches	Pump Down Capac.	Refrigerant Quantity	Kind	Condenser Cooling Medium	Type of System	Type of Compressor	Compressor Drive	Quantity of Oil	Overall Dimensions Inches
	R.p.m.	B.t.u.	R.p.m.	B.t.u.	R.p.m.	B.t.u.	R.p.m.	B.t.u.												
MAR-25-R	420	1,990	420	1,410	420	1,410	420	1,410	1/4	2	1 1/2 x 1 1/4	10	5 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	1 1/2 pts.	15 1/2 x 23 1/2 x 17 1/2
MAR-33-R	420	2,390	420	1,700	420	1,700	420	1,700	1/4	2	1 1/2 x 1 1/4	10	6 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	1 1/2 pts.	17 1/2 x 28 1/2 x 20
MWR-33-R	470	3,010	470	2,150	470	2,150	470	2,150	1/4	2	1 1/2 x 1 1/4	10	6 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	1 1/2 pts.	20 1/2 x 28 1/2 x 22 1/2
MAR-50-R	375	3,610	375	2,560	375	2,560	375	2,560	1/2	2	1 7/8 x 1 1/4	24	8 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	2 1/2 pts.	18 x 28 1/2 x 22
MWR-50-R	425	4,620	425	3,300	425	3,300	425	3,300	1/2	2	1 7/8 x 1 1/4	24	8 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	2 1/2 pts.	20 1/2 x 28 1/2 x 22 1/2
MAR-75-R	425	4,950	425	3,510	425	3,510	425	3,510	3/4	2	2 1/8 x 1 1/4	24	8 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	2 1/2 pts.	18 1/2 x 28 1/2 x 22
MWR-75-R	475	6,275	475	4,480	475	4,480	475	4,480	3/4	2	2 1/8 x 1 1/4	24	8 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	2 1/2 pts.	20 1/2 x 28 1/2 x 22 1/2
MAR-100-R	400	7,680	400	5,460	400	5,460	400	5,460	1	2	2 1/2 x 2 1/4	24	8 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	5 pts.	21 1/2 x 33 1/2 x 25 1/2
MWR-100-R	475	10,300	475	7,350	475	7,350	475	7,350	1	2	2 1/2 x 2 1/4	24	8 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	5 pts.	23 1/2 x 33 1/2 x 26 1/2
MWH-100-AC	400	12,900	400	9,100	400	9,100	400	9,100	1	2	2 1/2 x 2 1/4	24	8 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	5 pts.	23 1/2 x 33 1/2 x 26 1/2
MAR-150-R	400	10,550	400	7,480	400	7,480	400	7,480	1 1/2	2	2 1/2 x 2 1/4	24	10 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	5 pts.	22 1/2 x 33 1/2 x 26
MWR-150-R	475	14,130	475	10,100	475	10,100	475	10,100	1 1/2	2	2 1/2 x 2 1/4	24	10 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	5 pts.	24 x 37 1/2 x 26 1/2
MWH-150-AC	400	17,680	400	12,500	400	12,500	400	12,500	1 1/2	2	2 1/2 x 2 1/4	24	10 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	5 pts.	24 1/2 x 37 1/2 x 26 1/2
MAR-200-R	575	15,150	575	10,750	575	10,750	575	10,750	2	2	2 1/2 x 2 1/4	24	10 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	5 pts.	24 x 33 1/2 x 26
MWR-200-R	350	21,000	350	15,000	350	15,000	350	15,000	2	2	3 x 3 1/2	24	10 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	25 1/2 x 38 x 31 1/2
MWH-200-AC	575	26,000	575	18,500	575	18,500	575	18,500	2	2	2 1/2 x 2 1/4	24	10 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	25 1/2 x 38 x 31 1/2
MAR-300-R	450	27,000	450	19,300	450	19,300	450	19,300	3	2	3 x 3 1/2	34	12 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	29 1/2 x 51 x 32 1/2
MWH-300-AC	400	35,700	400	25,500	400	25,500	400	25,500	3	2	3 x 3 1/2	34	12 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	29 1/2 x 51 x 32 1/2
MWR-500-R	510	41,800	510	29,850	510	29,850	510	29,850	5	2	3 1/2 x 3 1/2	34	16 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	29 1/2 x 51 x 32 1/2
MWH-500-AC	475	57,800	475	40,500	475	40,500	475	40,500	5	2	3 1/2 x 3 1/2	34	16 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	29 1/2 x 51 x 32 1/2
MWR-750-R	525	67,700	525	48,400	525	48,400	525	48,400	7 1/2	4	3 x 3 3/4	75	18 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	7 pts.	36 x 64 x 33
MWH-750-AC	475	91,000	475	63,500	475	63,500	475	63,500	7 1/2	4	3 x 3 3/4	75	18 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	7 pts.	36 x 64 x 33
MWR-1000-R	525	92,000	525	65,750	525	65,750	525	65,750	10	4	3 1/2 x 3 3/4	75	18 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	7 pts.	36 x 64 x 36
MWH-1000-AC	500	130,000	500	92,000	500	92,000	500	92,000	10	4	3 1/2 x 3 3/4	75	18 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	7 pts.	36 x 64 x 36
MWR-1500-AC	600	173,700	600	123,000	600	123,000	600	123,000	15	4	3 1/2 x 3 3/4	75	20 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	7 pts.	36 x 64 x 36

Carbondale

Carbondale Machine Corp.
Harrison, N. J.

Compressor—Bellows and lubricated ring type shaft seal. Cylinder head cooled by air on all air-cooled models; water on "W" models except model

CU-32. Splash-type lubricating system. Oil level measured by bulls-eye glass in crankcase on models CU-102—CU-1503-W inclusive. Special dehydrated refrigeration oil for methyl chloride and Freon refrigerants. Viscosity of compressor oil: for methyl chloride, 240-260 at 100° F.; for Freon 150-175 at 100° F.

Condenser—Air-cooled models: continuous fin tube. Water-cooled models: double-tube using counterflow principle. Condenser mounted on base opposite motor, except for models CU-203-W to CU-1503-W inclusive, where it is between motor and compressor.

Controls—Penn or Detroit Lubrica-

tor pressure control. All "W" models have high pressure cutout. Overload relay overload cutout. Condensing water flow controlled by head pressure. Penn water regulating valve on all but models CU-753-W, CU-1003-W, and CU-1503-W which use Electromatic valve.

Special Features—The 1/4-hp., 1 1/2-hp.,

2-hp., and 15-hp. models are equipped with overhead intake valves.

Valves—Swedish flapper intake valve, flange seated cup discharge valves.

Materials Used—Cast semi-steel cylinder block. Cast iron pistons. Copper condenser tubing.

Model No.	40°		Refrigeration		Capacity		-10°		Motor Hp.	No. of Cyl.	Bore & Stroke Inches	Pump Down Capac.	Refrigerant Quantity	Kind	Condenser Cooling Medium	Type of System	Type of Compressor	Compressor Drive	Quantity of Oil	Overall Dimensions Inches
	R.p.m.	B.t.u.	R.p.m.	B.t.u.	R.p.m.	B.t.u.	R.p.m.	B.t.u.												
CU-21	360	1,250	360	1,250	360	1,250	360	1,250	1/4	1	1-13/16 x 1 1/2	5	2 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	1 pt.	26 x 18 1/2 x 22
CU-32	320	1,990	320	1,990	320	1,990	320	1,990	1/4	2	1-13/16 x 1 1/2	5	3 1/2 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	2 1/2 pts.	26 x 18 1/2 x 22
CU-32-W	360	2,780	360	2,780	360	2,780	360	2,780	1/4	2	1-13/16 x 1 1/2	5	3 1/2 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	2 1/2 pts.	26 x 18 1/2 x 22
CU-52	320	3,160	320	3,160	320	3,160	320	3,160	1/2	2	2 1/4 x 1 1/2	6	4 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	3 pts.	32 x 19 1/2 x 23
CU-52-W	385	4,350	385	4,350	385	4,350	385	4,350	1/2	2	2 1/4 x 1 1/2	6	4 1/2 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	3 pts.	32 x 19 1/2 x 23
CU-72	320	4,230	320	4,230	320	4,230	320	4,230	3/4	2	2 1/4 x 2	6	4 1/2 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	3 pts.	32 x 19 1/2 x 25
CU-72-W	385	6,230	385	6,230	385	6,230	385	6,230	3/4	2	2 1/4 x 2	6	5 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	3 pts.	32 x 19 1/2 x 25
CU-102	275	6,780	275	6,780	275	6,780	275	6,780	1	2	2 1/4 x 3	11 1/2	8 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	6 pts.	38 1/2 x 25 x 30 1/2
CU-102-W	320	8,700	320	8,700	320	8,700	320	8,700	1 1/2	2	2 1/2 x 3	11 1/2	8 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	38 1/2 x 25 x 30 1/2
CU-152	320	9,400	320	9,400	320	9,400	320	9,400	1 1/2	2	2 1/2 x 3	11 1/2	8 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	6 pts.	38 1/2 x 25 x 30 1/2
CU-152-W	320	12,770	320	12,770	320	12,770	320	12,770	1 1/2	2	2 1/2 x 3	11 1/2	8 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	38 1/2 x 25 x 30 1/2
CU-202	400	11,800	400	11,800	400	11,800	400	11,800	2	2	2 1/2 x 3	11 1/2	8 lbs.	CH ₃ Cl	Air	Open	Reciprocating	V-Belt	6 pts.	38 1/2 x 25 x 30 1/2
CU-202-W	400	23,650	400	23,650	400	23,650	400	23,650	2	2	2 1/2 x 3	11 1/2	8 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	6 pts.	38 1/2 x 25 x 30 1/2
CU-203-W	400	20,000	400	20,000	400	20,000	400	20,000	3	3	2 1/2 x 3	19 1/2	12 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	8 pts.	52 1/2 x 25 x 31 1/2
CU-303-W	400	36,450	400	36,450	400	36,450	400	36,450	3	3	2 1/2 x 3	19 1/2	12 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	8 pts.	52 1/2 x 25 x 31 1/2
CU-503-W	400	59,000	400	59,000	400	59,000	400	59,000	5	3	3 1/4 x 3	19 1/2	14 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	9 pts.	52 1/2 x 25 x 32
CU-753-W	275	88,500	275	88,500	275	88,500	275	88,500	7 1/2	3	4 x 4 1/4	30 1/2	17 1/2 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	12 pts.	65 x 32 1/2 x 36 1/2
CU-1003-W	345	112,200	345	112,200	345	112,200	345	112,200	10	3	4 x 4 1/4	30 1/2	17 1/2 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	12 pts.	67 x 32 1/2 x 36 1/2
CU-1503-W	525	151,500	525	151,500	525	151,500	525	151,500	15	3	4 x 4 1/4	30 1/2	19 lbs.	CH ₃ Cl	Water	Open	Reciprocating	V-Belt	12 pts.	67 x 32 1/2 x 36 1/2

Strang

Strang Air Conditioning Corp.
Kansas City, Mo.

Compressor—Siphon shaft seal. Cylinder head cooled by water.

Condenser—Strang special condenser cooler. Located above compressor.

Liquid Receiver—Horizontal type.

Controls—Detroit Lubricator con-

trol. All models have high pressure cutout. Thermal overload cutout. Fisher water regulating valve.

Model No.	40°		Refrigeration		Capacity		-10°		Motor Hp.	No. of Cyl.
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COMMERCIAL REFRIGERATION

Complaint of Federal Trade Commission Concerning Ice Cream Makers' Attack On Counter-Type Freezer Trade

Pursuant to the provisions of an Act of Congress approved September 26, 1914, entitled "An Act to create a Federal Trade Commission, to define its powers and duties, and for other purposes," the Federal Trade Commission having reason to believe that International Association of Ice Cream Manufacturers, its officers and members, and the following named persons: G. G. Kindervater, W. R. Cammack, Madison H. Lewis, and Robert C. Hibben, individually and as President, Vice President, Treasurer, and Executive Secretary, respectively, of said association, and the following named corporations: National Dairy Products Corp., The Borden Company, Golden State Company, Ltd., Midwest Dairy Products Corp., French-Bauer, Inc., and Southwest Utility Dairy Products Co., as members of said association, hereinafter referred to as respondents, have been and are using unfair methods of competition in commerce, as "commerce" is defined in said Act of Congress, in violation of said Act, and it appearing to said Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues its complaint stating its charges in that respect as follows:

Definition of Association

Paragraph One: That the respondent International Association of Ice Cream Manufacturers, hereinafter referred to as the association, is a corporation incorporated and existing under the laws of the State of Delaware, having its principal place of business in the City of Washington, District of Columbia, to wit, the Barr Building; that its membership consists of approximately 500 wholesale ice cream manufacturers and distributors throughout the United States, of which number the following members are representative, National Dairy Products Corporation, a corporation, having its principal place of business in New York City, New York; Golden State Co., Ltd., a corporation, having its principal place of business in San Francisco, California; Midwest Dairy Products Corp., a corporation having its principal place of business in DuQuoin, Illinois; French-Bauer, Inc., a corporation, having its principal place of business in Cincinnati, Ohio; and Southwest Utility Dairy Products Co., a corporation, having its principal place of business in Oklahoma City, Oklahoma; that the association's membership also includes a number of affiliated state or regional ice cream associations, who each have the right of electing one director to the Board of Directors of the International Association, upon the payment of an annual fee of Twenty-five (\$25.00) Dollars; that G. G. Kindervater, W. R. Cammack, Madison H. Lewis, and Robert C. Hibben, are respectively President, Vice President, Treasurer, and Executive Secretary of said association, in charge of and conducting its activities and affairs; that those hereinabove specifically named as members of the association respondent do not embrace the entire list or number of such members; that such members constitute a class so numerous, far-flung, and changing as to make it impracticable to specifically name each and every one of them as parties respondent herein; that those specifically named herein are fairly representative of the whole; that all members of the aforesaid association respondent are also made parties respondent herein as a class of which those specifically named are representative; that said members of said association are hereinafter called the members.

In Direct Competition

Paragraph Two: That in the course and conduct of the business, affairs, and activities of said association respondent, its officers and members respondent, they have been and are engaged in commerce among the several states and in trade, business, and commerce relating to, and affecting interstate commerce, as hereinafter alleged; that said members of said association and respondents herein purchase their milk and other ingredients and supplies in the course and conduct of their business from dairymen, producers, manufacturers, and distributors in various states and cause such products and supplies to be shipped and transported to their warehouses, places of business, and to their customers from points in states other than the states in which such respective points of destination are located; and in the course of the sale and distribution of their ice

cream and other merchandise said respondents, cause their ice cream and other merchandise when sold to be shipped and transported pursuant to purchase orders from their warehouses, places of business, or direct from their suppliers to their customers at points in states other than the state in which such respective shipments originate; that except in so far as competition has been restrained, stifled, lessened, suppressed, eliminated or destroyed by the respondents as hereinafter alleged, each of the respondents have been and are engaged in the course and conduct of such business, affairs, and activities in actual and potential competition with counter ice cream freezer operators and owners, and in direct or indirect competition with manufacturers and distributors thereof.

Research Bureau Named

Paragraph Three: That the association respondent's business affairs and activities in behalf of, and in cooperation with its members, throughout the several states, include among others, the holding of meetings, technical and advisory service, group insurance, statistical and accounting service, industry coordination, a special research bureau on counter freezers, and a legislative bureau which cooperates with helath and food officials, and which keeps a record of all state and city legislation relating to ice cream and advises with its members in regard to such legislation as well as keeping them informed upon the progress of such legislation.

Purposes of Association

Paragraph Four: That the avowed objects and purposes of the association respondent as set forth in Article II of its By-Laws are as follows:

"First: to promote and safeguard the common business interests of its members.

"Second: To establish and maintain friendly relations among those engaged in the manufacture of ice cream.

"Third: To take united action upon all matters affecting the welfare of the industry at large, and to regulate and correct abuses relative thereto."

Unfair Methods Enumerated

Paragraph Five: That for more than three years last past respondents have united in a common course of unfair competition and have cooperated and confederated together in a conspiracy to prevent, suppress, and delay the sale, marketing, installation, purchase, use of, and satisfied operation of counter ice cream freezers, which is a legitimate but highly competitive enterprise to the wholesale manufacture of ice cream by the respondents, by the following unfair acts, tactics, methods, practices and things done or attempted to be done, and each of them, among others; to-wit:

(a) By the respondents frequently holding general and special meetings, and carrying on a large volume of correspondence, for the interchange of information concerning, and the discussion and adoption of plans, measures, and procedure for the carrying out of their said undertaking.

(b) By the respondents publishing, distributing and disseminating among its members, bulletins and pamphlets, disparaging, defaming and discouraging the sale, purchase, use and operation of counter freezers, with the express intent and purpose that said members distribute and disseminate the same among prospective purchasers and operators, or owners and operators of counter freezers.

(c) By the respondents soliciting and securing by fraud, misrepresentation, and other unfair means, alleged bona fide letters and their contents from alleged dissatisfied purchasers, owners, and operators of counter freezers, which criticize, disparage, defame and discourage the use of counter freezers, and the copying, mimeographing, planographing, distributing and disseminating of the same among its members, for the express purpose of said members and their salesmen distributing, disseminating, showing and conversing about the contents of said letters to prospective purchasers and operators, or owners and operators of counter freezers.

(d) By the respondents boycotting, or threatening to boycott suppliers, distributors, and vendors of counter freezers, and by other means of intimidation, including publicity, con-

demnatory articles, and appeals to said suppliers', distributors', and vendors' customers to file protests and refuse to continue dealing with said suppliers, distributors, and vendors, attempt thereby to coerce, do coerce and compel said suppliers, distributors, and vendors to refuse and refrain from handling and selling or continuing to handle and sell counter freezers.

(e) By the respondents boycotting or threatening to boycott prospective purchasers and operators or owners and operators of counter freezers, and by other threats and intimidation, attempt to coerce, do coerce and compel said prospective purchasers and operators or owners and operators of counter freezers to refuse and desist from using and operating said counter freezers.

(f) By the respondents attempting to prevail upon and prevailing upon creameries, milk products distributors, distributors of ice cream mix and vendors of ice cream mix by threats of loss of business, intimidation, and boycott, to refuse to deliver ice cream mix, or to deliver inferior ice cream mix, or "scorched" ice cream mix to counter freezer operators.

(g) By the respondents working with the various city and state sanitary inspectors and officials to prevail upon them and assist them in harassing and interfering with prospective purchasers and operators or owners and operators of counter freezers to the extent of causing them great loss of time, heavy financial expense and forcing them to discontinue the installation of, or use and operation of said counter freezers.

(h) By the respondents approaching prospective purchasers and operators, or owners and operators of counter freezers, and offering to purchase said counter freezers at exorbitant prices so as to eliminate and remove such competition, and to effect the return of said ice cream business to said respondents.

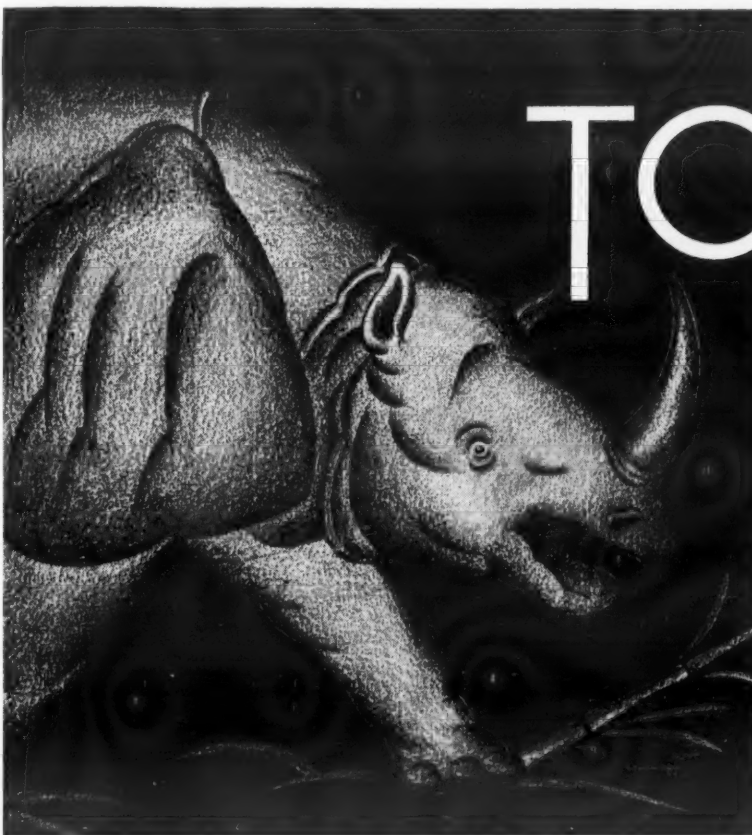
(i) By the respondents offering to reduce and reducing the wholesale price of ice cream to a prospective purchaser or operator, or to an operator, or owner, of a counter freezer so as to meet and destroy such counter freezer competition, with the further agreed and secret concerted plan of action, after such offer is accepted, and the counter freezer competition destroyed, that the wholesale price of ice cream to said former prospective purchaser or operator, or former operator or owner of said counter freezer shall be restored to the rate that prevails throughout the territory, or district.

(j) By the respondents coercing, prevailing upon and attempting to prevail upon prospective drug store purchasers and operators or drug store operators and owners of counter freezers through threats of setting up and operating competing drug stores, not to purchase, use and operate, or continue to use and operate counter freezers.

(k) By the respondents preparing and sponsoring legislation and local ordinances or amendments thereto, in bad faith to be introduced and sponsored by its members, into the law-making bodies of the several states and cities, with the apparent purpose and guise of such legislation and local ordinances, or amendments thereto, clarifying, unifying and establishing a standard of sanitary regulations for the manufacture of ice cream, but with the secret and undisclosed unlawful purpose and intent behind such legislation and local ordinances, or amendments thereto, and the undisclosed unlawful effect of the provisions of the same being to destroy or suppress the growth of competition from counter freezers and making it impossible or practically impossible for prospective purchasers and operators of counter freezers to enter the field, or for operators, and owners of counter freezers to continue in the field; that the true intent of the re-

spondents in preparing and sponsoring such legislation and local ordinances, or amendments thereto, is shown in the following situation, among others, that as soon as they succeeded in introducing the same they used this pending legislation or pending local ordinance, or pending amendment or amendments thereto, as a threat, club, or coercive measure to delay and defeat the purchase of counter freezers, and eliminate the continued use and competition of counter freezers; that the bad faith of the respondents in preparing and sponsoring such legislation and local ordinance or amendments thereto, is shown by the following situation, among others, that the proposed provision that all ice cream mix must be pasteurized at the point of freezing—a requirement which would work an extreme hardship on counter freezer operators, and owners—was "soft peddled" and laid aside, because it was found that many of their own members could not meet this regulation without heavy expense; and in the additional situation, among others, that in their zeal to secure stringent regulations which could be met by the respondents but not by the counter freezer operators, and owners, several of the member respondents presented bills, ordinances, or amendments thereto, their respective law-making bodies which were defeated because of their unnecessarily drastic provisions, with the result that the association respondent began advising the member respondents to avoid setting up these specific drastic regulatory provisions in proposed statutes, ordinances, or amendments thereto; but rather to make these proposed enactments general in nature with a provision that a supervisory authority set up appropriate regulations for the carrying out of the act, ordinance, or amendment, with it being secretly pointed out to the member respondents that the chances of getting drastic regula-

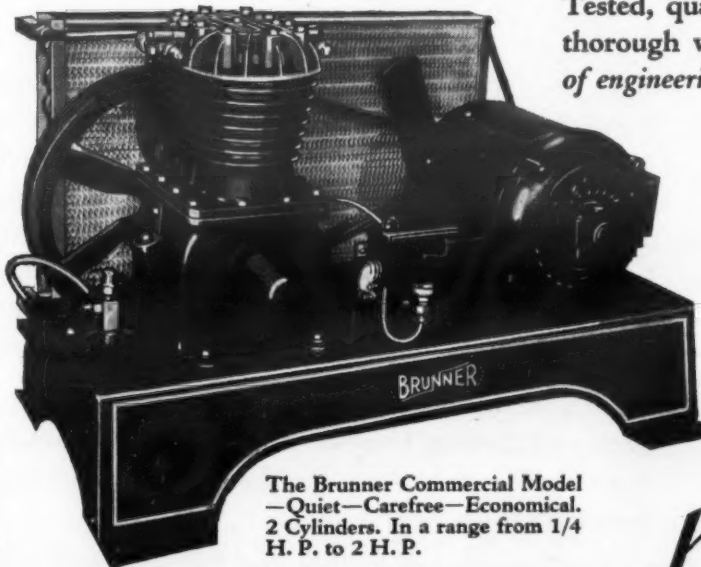
(Concluded on Page 14, Column 1)



TOUGH

as a
*Charging
Rhino*

● Tough, dependable units for the industry's toughest refrigeration assignments! Brunner's ruggedness of construction... which is almost a byword wherever refrigeration is discussed... gets its start in the type of materials which go into every Brunner Compressor and Highside. Tested, quality materials, and these backed by thorough workmanship and Brunner's 29 years of engineering experience.



The Brunner Commercial Model—Quiet—Carefree—Economical. 2 Cylinders. In a range from 1/4 H. P. to 2 H. P.

The 1935 Brunner line, designed with larger size compressors and other improvements, brings new efficiency, new quietness, new economy to your refrigeration problems. Eight models of compressors, 41 models of highsides, from 1/6 H. P. to 15 H. P. New catalog with valuable information now ready. Write today for your copy. Brunner Manufacturing Company Utica, N. Y., U.S.A.

Brunner

A NAME BUILT BY 29 YEARS OF SERVICE

COMMERCIAL REFRIGERATION

Text of Complaint by Trade Commission

(Concluded from Page 13, Column 5)
tions directed against the installation, use and operation of counter freezers adopted by such an administrative authority was much better than getting them approved by the law-making bodies.

(l) By the respondents threatening to prepare, introduce and sponsor prohibitive state legislation, local ordinances, and amendments thereto, as set forth in subparagraph (k) above, if prospective purchasers and operators of counter freezers do not desist from purchasing said counter freezers, and operators and owners of counter freezers do not desist from using and operating said counter freezers.

(m) By the respondents using other collective and individual means to carry out and make effective their aforesaid undertaking.

Paragraph Six: That the above alleged unfair acts, tactics, methods, practices, and things done or attempted to be done, and each of them, by the respondents, collectively and individually, have tended and still tend to, and did and do restrain, hinder, discourage and delay prospective purchasers and operators of counter freezers from purchasing, installing and operating counter freezers; and have tended and still tend to, and did and do restrain, hinder and discourage owners and operators of counter freezers from continuing to use and operate counter freezers; with the result that competition in the manufacturing, making, preparing, and selling of ice cream is unduly and illegally obstructed and hindered, and consumers have been and are deprived of the advantage in price, quality, and otherwise, which they would obtain from the natural flow of commerce in ice cream under conditions of free competition; wherefore, said unfair acts, tactics, methods, practices, and things done or attempted to be done, and each of them, by the respondents, collectively and individually constitute unfair methods of competition in commerce within the intent and meaning, and in violation of Section 5 of said Act approved September 26, 1914, entitled "An Act to create a Federal Trade Commission, to define its powers and duties, and for other purposes."

Wherefore, the premises considered, the Federal Trade Commission on this 27th day of March A. D. 1935, now here issues this its complaint against said respondents, stating its charges in that respect as hereinabove set out.

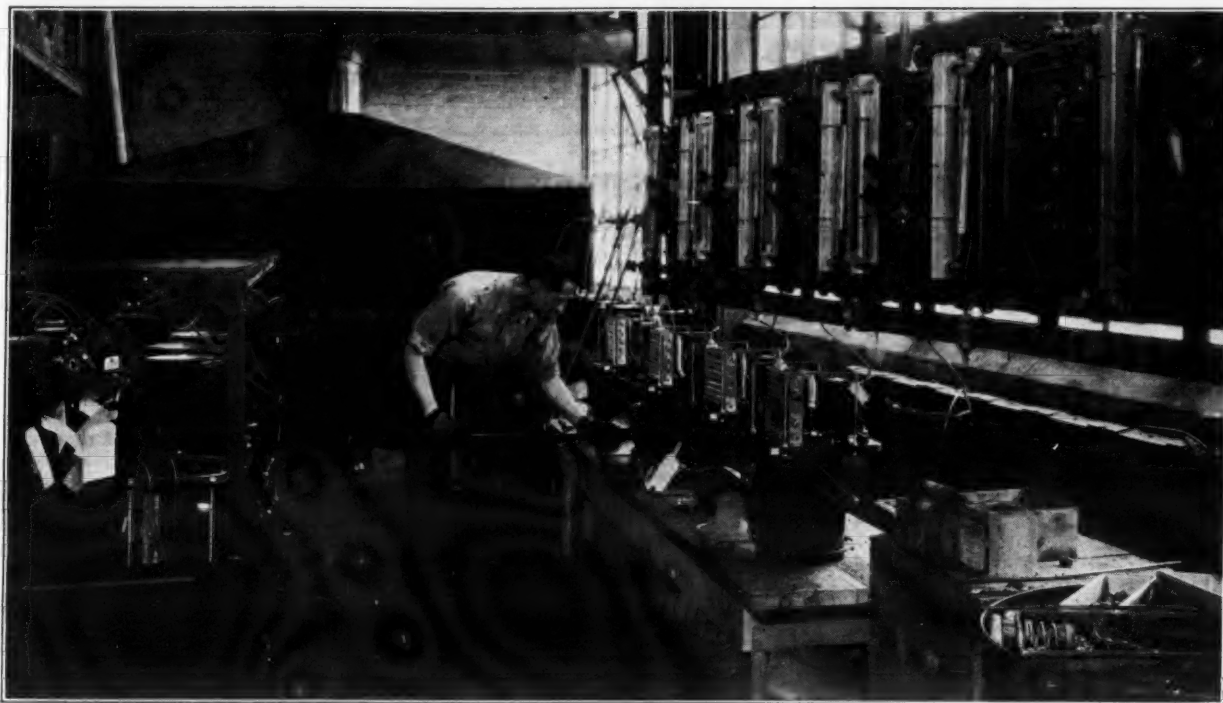
NOTICE:

Notice is hereby given you, International Association of Ice Cream Manufacturers, its officers and members: G. G. Kindervater, W. R. Cammack, Madison H. Lewis, and Robert C. Hibben, individually and as President, Vice President, Treasurer, and Executive Secretary, respectively, of said association; National Dairy Products Corp., The Borden Co., Golden State Co., Ltd., Midwest Dairy Products Corp., French-Bauer, Inc., and Southwest Utility Dairy Products Co., as members of said association, respondents herein, that the 3rd day of May, A. D., 1935, at 2:00 o'clock in the afternoon, is hereby fixed as the time, and the offices of the Federal Trade Commission in the City of Washington, D. C., as the place, when and where a hearing will be had on the charges set forth in this complaint, at which time and place you shall have the right, under said Act, to appear and show cause why an order should not be entered by said Commission requiring you to cease and desist from the violations of law charged in the complaint.

You are notified and required, on or before the twentieth day after service upon you of this complaint, to file with the Commission an answer to the complaint. If answer is filed, and if your appearance at the place and on the date above stated be not required, due notice to that effect will be given you. The Rules of Practice adopted by the Commission with respect to answers or failures to appear or answer (Rule V) provides as follows:

(a) In case of desire to contest the proceeding, the respondent shall, within 20 days from the service of the complaint, file with the Commission an answer to the complaint. Such answer shall contain a short and simple statement of the facts which constitute the ground of defense. Respondent shall specifically admit or deny or explain each of the facts alleged in the complaint, unless respondent is without knowledge, in which case respondent

Kelvinator Water Coolers in the Making



On the charging line in the water cooler production department at the Kelvinator factory. The units shown have a small rotary compressor, and comprise one of several Kelvinator series of water-cooling units. Reports from the field indicate water-cooler business is on the upgrade.

shall so state, such statement operating as a denial. Any allegation of the complaint not specifically denied in the answer unless respondent shall state in the answer that respondent is without knowledge, shall be deemed to be admitted to be true, and may be so found by the Commission.

(b) In case respondent desires to waive hearing on the charges set forth in the complaint and not to contest the proceeding, the answer may consist of a statement that respondent refrains from contesting the proceeding or that respondent consents that the Commission may make, enter, and serve upon respondent an order to cease and desist from the violations of the law alleged in the complaint, or that respondent admits all the allegations of the complaint to be true. Any such answer shall be deemed to be an admission of all the allegations of the complaint, to waive a hearing thereon, and to authorize the Commission, without a trial, without evidence, and without findings as to the facts or

other intervening procedure, to make, enter, issue and serve upon respondent.

(c) In cases arising under Section 5 of the Act of Congress approved September 26, 1914, entitled "An Act to Create a Federal Trade Commission, to define its powers and duties, and for other purposes" (The Federal Trade Commission Act),

—an order to cease and desist from the violations of law charged in the complaint.

(f) Failure of the respondent to appear or to file answer within the time as above provided for shall be deemed to be an admission of all allegations of the complaint and to authorize the Commission to find them to be true and to waive hearings on the charges set forth in the complaint.

In Witness Whereof, The Federal Trade Commission has caused this, its complaint to be signed by its Secretary, and its official seal to be hereto affixed at Washington, D. C., this 27th day of March, A. D., 1935.

By the Commission:
Otis B. Johnson, Secretary.

3 Larkin Factories Go on Overtime Shifts to Fill Orders

ATLANTA — Larkin Refrigerating Corp.'s Atlanta, Chicago, and New York City factories have gone on overtime shifts to fill orders for the new line of Larkin coils and the Larkin beer cooler, reports B. E. Yancey, president.

The new lines of Larkin coils are featured by staggered tubing, imbedded fin-to-tube contact and "Infin" (internal fin). Last-named feature is an internal fin with an inherent spring pressure, forming a tight metal-to-metal contact along the side walls and bottom of the tube and breaking up the film which acts as an insulator on the side wall as well as conducting the heat to the center of the tube to be carried off by the refrigerant.

Commercial Refrigerator Industry Redefined

WASHINGTON, D. C.—An amendment to the Code of Fair Competition for the Commercial Refrigerator Industry was recently established, said amendment being a new Section 1, Article IX, to read as follows:

"Section 1. The term 'Commercial Refrigerator Industry' or 'Industry,' as used herein, means and includes the manufacture (fabrication and assembly) and/or sale (by the manufacturer,) and/or installed (by the manufacturer) of Commercial Refrigerators and such other related branches, subdivisions and/or functions as may from time to time be included under the provisions of this Code by the National Industrial Recovery Board after such notice and hearing as said Board may prescribe."

4 Representatives Named By Allen-Bradley

MILWAUKEE—Four new sales representatives were recently appointed by Allen-Bradley Co. of this city, manufacturer of control equipment.

They are as follows: Robert McGarry, Utica, N. Y.; Bjorn Hansen, Springfield, Ill.; R. B. Solderberg, Hartford, Conn.; and W. J. Hess, Charleston, W. Va.

Frigidaire Commercial Continues Increase

DAYTON—For the twentieth consecutive month, commercial refrigeration sales volume of Frigidaire Corp. has bettered the same month a year ago, W. D. McElhinny, commercial division manager of the company announced recently.

For February, he stated, the increase was 76 per cent over dollar volume in February, 1934.

Whereas increased sales volume on commercial equipment came during the last two years as a result of the return of beer, liquor, and wine, it is now coming from general modernization of retail stores, he said.

Armstrong Organizes Building Division

LANCASTER, Pa.—Armstrong Cork Products Co. recently organized a building materials division, to be headed by H. R. Peck, who has been with the Armstrong company for the past 15 years. G. C. Denebrink is assistant general manager of the division.

Six departments have been coordinated in the building materials division. Department heads are as follows:

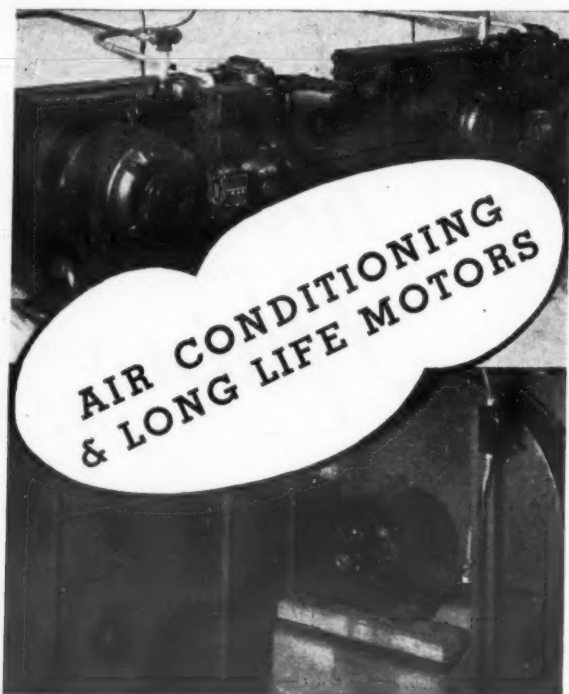
T. R. Nunan, low temperature insulation department, which handles the sale of corkboard, cork covering, etc.; J. L. Allison, high temperature insulation department, responsible for the sale of insulating brick and other products used in industrial furnaces; L. E. Cover, manager of the Temlok department, which includes fibre-board insulation products for residential and general building construction; H. D. Stewart, manager of the floor tile department; R. H. Craig, acoustical department; and J. C. McCarthy, manager of the Linowall department, which handles the sales of the company's linoleum-type wall covering.

ANSUL'S
Single Standard
OF
Excellence

The Ansul tradition . . . to make as fine refrigerants as it is possible to produce . . . was established years ago. That this ideal has never for a moment been lost sight of is evidenced by the reputation for high quality products that has been established.

You will find Ansul Sulphur Dioxide and Ansul Methyl Chloride perfect for refrigeration purposes. Quality is guaranteed because every cylinder is given an individual analysis.

ANSUL CHEMICAL CO.
MARINETTE - WISCONSIN



REPULSION START INDUCTION BRUSH LIFTING SINGLE PHASE MOTORS

High starting torque—low starting current—dependable—efficient! Look for these features in motors for your Air Conditioning Equipment—you'll find them all in Century Single Phase Brush Lifting Type Motors, proved by more than 31 years' successful service in automatic and remote control installation under all kinds of surroundings, climates and severe operating conditions . . . Sizes 1/8 to 40 H. P.

Have you an Air Conditioning design or installation problem? Century Engineers will help you—Century Motors will satisfy every requirement of this modern development.

Century Motors are built in sizes 1/250 to 600 H. P.

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1806 Pine Street St. Louis, Mo.

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2 Horse Power Century Type RS, Single Phase, Repulsion Start Induction Motor

Century

MOTORS 1/250 to 600 H. P.

SERVICE

Explanation of the Principles Of Mechanical Refrigeration

By K. M. Newcum

Editor's Note: Following is the second of a series of articles prepared by K. M. Newcum for the special benefit of refrigeration and air-conditioning installation and service men.

The first article, published in the April 10, 1935, issue of *ELECTRIC REFRIGERATION NEWS*, dealt with the fundamentals of refrigeration. Since refrigeration is really a process for the removal of heat from a given space, these "fundamentals" consist mainly of the terms, definitions, and physical laws which are involved when heat is transferred from one substance or space to another location.

In this second article, Mr. Newcum gives a brief description of the three principal parts of a refrigeration system and an explanation of the "cycle" of operation.

Other articles which will appear in coming issues of the *News*, will go into the subject of installation and servicing of refrigerating machines and will explain how the service man should proceed in handling the problems which he will meet most frequently.

Beginners are advised to make a most careful study of these initial articles since the terms which are explained in these paragraphs will be used frequently in succeeding articles. Unless the service man has a clear understanding of the law of heat and an accurate picture of the cycle of operation of the refrigeration system, he cannot hope to determine quickly and accurately how to correct the troubles which may cause a mechanical refrigerator to operate inefficiently or cease working altogether.

It has been noted from the preceding chapter that refrigeration in the true sense of the word is the reduction of temperature of a space below that of the surrounding atmosphere. It is also known that heat permeates everything, but that there are materials known as insulating materials, that tend to retard the inflow of heat. Thus if we wish to refrigerate a space, we should do everything possible to prevent heat from entering the space.

Automatic or mechanical refrigeration not only lowers the temperature of the space but maintains this low temperature constantly. Hence the more efficient the insulating material in the refrigerator, the less refrigeration will be required, or what is the same thing, the less the system will

have to do in the way of removing heat.

The mechanical refrigerator is composed of three principal parts—the cabinet, the evaporator, and the condensing unit.

20. Cabinet

The cabinet is so designed and constructed, and of such materials as will provide a maximum resistance to the inflow of heat.

The purpose of the refrigerator cabinet is to provide a space of suitably low temperature to store and preserve foodstuff. (See Fig. 2.)

21. Evaporator

The evaporator is the mechanical contrivance that is located inside the cabinet. Its purpose is to act as an absorbing agent to carry the heat from within the cabinet to the refrigerant contained in the evaporator.

The evaporator is usually constructed of copper or a similar material, having a high rate of heat conductivity. It is so designed that it acts as a container for holding a certain amount of refrigerant. The exchange of heat from the surfaces of the evaporator to the refrigerant results in the vaporizing of the liquid refrigerant.

The evaporator is connected to the condensing unit by means of tubes or pipes. One tube to supply the liquid and the other tube to carry the vapors back to the condensing unit.

The evaporator is sometimes known as the chilling unit or cooling coil, but in all respects its purpose is the same.

22. Condensing Unit

The condensing unit is a machine for removing the heat from the vapors, which has been absorbed from the refrigerator by the evaporator. In the process of removing the heat, the condensing unit also reclaims the refrigerant vapor by compressing it and forcing it to return to a liquid state. This liquid is returned under pressure to the evaporator. This process is known as condensing, hence the name condensing unit.

23. Refrigeration Cycle

EVAPORATION: It is known that when water evaporates and changes

into steam that the temperature has not been increased. This is true with any of the refrigerants. The only change that has actually taken place is that the liquid has changed its state from that of a liquid to that of a gas, and in so doing absorbed latent heat, and with the molecules being widely separated, the vapor or steam occupies a much larger space.

COMPRESSION: The vapor which was formed due to the absorption of heat during this process of evaporation can be compressed into a much smaller space than it would normally occupy.

Since, however, the quantity, that is, the amount of heat contained in the vapor remains constant, the temperature of the vapor will be increased by compressing it into a smaller space. This part of the process is accomplished by the condensing unit. The vapor drawn from the evaporator to the condensing unit is crowded into a much smaller space, and as the pressure in the space is increased by the continuous introduction of heat laden gas, the temperature of the gas increases.

CONDENSATION: The pumping action of the compressor continues, which by its action is crowding more heat laden gas into the smaller space, until the temperature of the confined gas is increased above that of the surrounding environment.

As we know, heat travels from the warmer to the colder substance, thus the heat flows from the hot compressed gas into the surrounding air. The result is that the heat which was absorbed during the process of evaporation is given up to the cooling medium, and carried away by it, in the same respect that the radiator gave up its heat to the room.

When this heat has been given up by the hot gas to the cooling medium, the refrigerant changes its physical state and condenses back into a liquid. This liquid refrigerant is then returned to the evaporator and the process repeated.

The Cycle of Operation: From our study thus far, it is not difficult to understand why the service man must have a thorough understanding of the principles, as well as the actual cycle of operation. For the service man should, before making any repair or adjustment, be able to make a complete picture of what is taking place inside the refrigeration system.

Although several points are covered and repeated this is deemed necessary to bring certain fundamental facts to light so that they may be fully and completely understood before going into the actual service operations.

24. Cycle

A cycle is an interval or period of time occupied by one round or course of events occurring in the same order or series. The word "cycle" as applied to our study of refrigeration means a series of operations, in which heat is first imparted to the refrigerant, changing its state from that of a liquid to that of a gas, then the gas is compressed, and forced into the condenser, where the heat is given up to the cooling medium, thus bringing the refrigerant again to its original state as a liquid.

The cycle of operation and the refrigerant circuit in the mechanical refrigeration system is as follows:

25. Heat Enters Refrigerator

The heat leaks through the insulation of the cabinet, enters when the doors are opened, or is carried in with warm foods or water.

The air within the cabinet is the first object the heat units encounter, therefore, the heat unites with the circulating air and is carried to the surfaces of the evaporator.

As the evaporator absorbs the heat units, a certain amount of the refrigerant vaporizes. The vapor laden with the several heat units is drawn away by the motor driven compressor, through a copper tube, and is compressed until there has been crowded together a sufficient quantity of heat to raise the temperature of the gas above that of the cooling medium.

The heat then is given up to the cooling medium and condensation takes place.

26. Heat Given Up to Cooling Medium

The heat that originally entered the refrigerator from the air in the room has now been passed back into the air.

27. Vapor Returns to Liquid in Condenser

The liquid refrigerant formed in the condenser, flows by its own weight to the bottom of the condenser, and then to the liquid receiver. From the liquid receiver it is forced by the pressure, through a second copper tube back to the evaporator, where it is admitted as needed and the cycle repeated.

28. Throttle Valve

The flow of liquid refrigerant into the evaporator is regulated by a throttle valve, which in its action admits only a predetermined amount. This throttle valve, whether it be a float valve, expansion valve, or capillary tube, serves two distinct purposes.

First: to maintain a pressure on the liquid in the liquid line and in the condenser and liquid receiver, so as to retain the refrigerant in a liquid state. (It will be remembered that, even though refrigerants have a low boiling point at atmospheric pressure, they will not boil under high pressure.)

Second: to admit some of the liquid refrigerant to the evaporator to compensate for the amount that has previously vaporized.

29. Sucking Action of Compressor

Due to the pumping or sucking action of the compressor which in reality is drawing the vapor from the evaporator, this temperature of the evaporator is reduced, for the sucking action of the compressor tends to cause the refrigerant to boil very violently. Thus while the compressor is running the temperature of the refrigerant in the evaporator is being lowered.

Inasmuch as the starting and stopping device for the electric motor is an entirely different subject and does not actually enter into the actual principle of refrigeration, it will not be discussed at this time, but the cycle of operation involving the refrigerant circuit will be continued.

30. Two Pressure Sides of the System

In the mechanical refrigeration cycle there is a high pressure and a

low pressure side. The liquid refrigerant is released from its high pressure, into the low pressure side of the system, where it expands.

In the process of expansion, or evaporation, it accumulates or absorbs heat. It is then by the pumping action of the compressor subjected to a high pressure, and forced over into the high side of the system. As continuous pressure is applied and the heat laden gas is crowded into a smaller space, the pressure and temperature of the gas increases.

31. Check Valves Between High and Low Sides

There must be a check valve between the two sides in order to maintain this difference in pressure. Unless this pressure difference is maintained, little or no refrigeration would be effected. The throttle described in paragraph 28 is the check valve between the high pressure side and the low pressure side.

32. High Pressure Side

There is also a check valve between the low pressure side and the high pressure side. This check valve is known as the discharge valve and is located in the compressor proper.

The discharge valve is located between the top of the piston and cylinder assembly, and the cylinder head. It is through this valve that

(Concluded on Page 16, Column 1)

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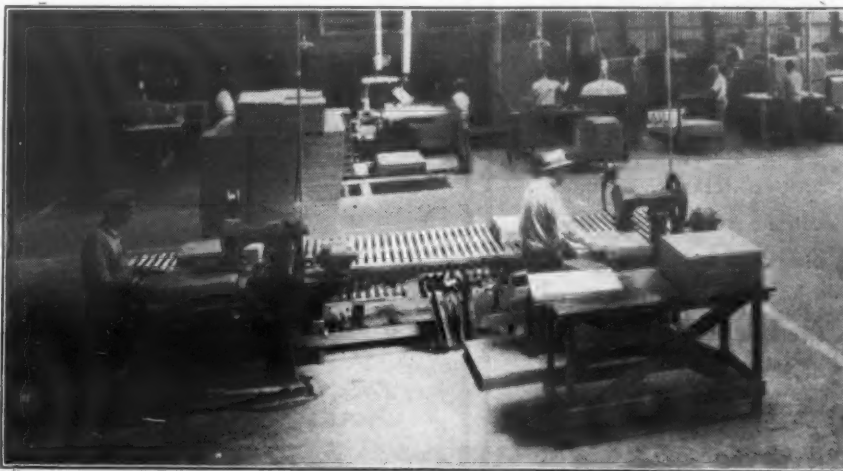
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Cross Section of Refrigerator

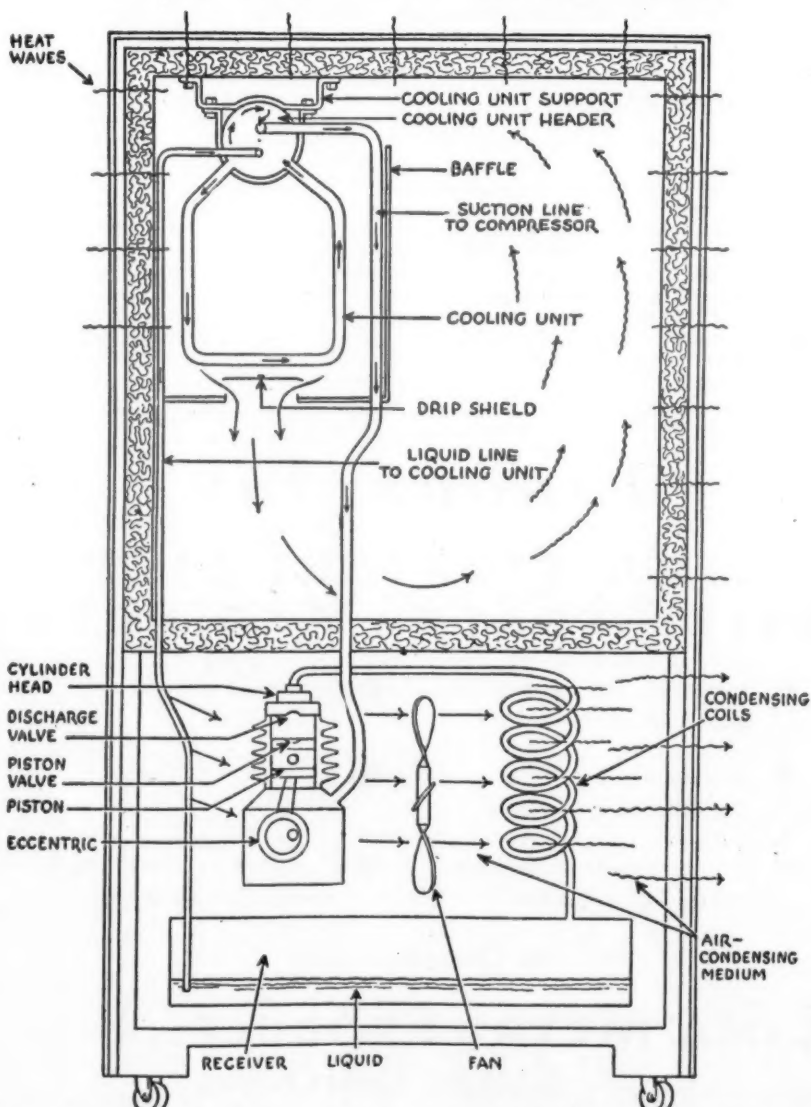


Fig. 2. Diagrammatic view of a typical household refrigerator, showing various parts and nature and direction of the air flow.

SERVICE

Principles of Refrigeration

(Concluded from Page 15, Column 5)
all the heat laden gas from the low side is pumped over into the condenser, hence on the high side.

The efficiency of this valve is of paramount importance for if the discharge valve leaked, the pressure from the high side would build back up in the low side, raising the pressure of the low pressure gas, which would prevent it from vaporizing.

The discharge valve opens on each compression stroke of the piston, and closes on each suction or down stroke of the piston. It is on the suction stroke of the piston that the cylinder chamber is filled with heat laden low pressure gas to again be forced through the discharge valve on the compression stroke.

33. Discharge Shut-Off Valve

Located between the discharge valve and the condenser, usually on top of the cylinder head, is a manually controlled two-way shut-off valve. The purpose of this valve is to close off between the compressor and the condenser in event, while servicing, it becomes necessary to separate the compressor from the condenser.

The high pressure and low pressure side are clearly illustrated in Fig. 3.

The high pressure side is then defined as being all that part of the system, beginning at the top of the discharge valve, through the condenser, through the liquid receiver, through the liquid line, and to the

needle and seat of the throttle valve.

34. Low Pressure Side

The action of the throttle valve is such that it permits liquid from the liquid line to pass into the evaporator, to replace that which has been drawn back into the compressor in the form of vapor.

When the liquid passes the throttle valve it has left the high pressure side and is now in the low pressure side. When on the low pressure side it vaporizes, and is drawn into the compressor through the suction line. On the suction stroke of the piston this vapor fills the cylinder chamber, to be again forced on the compression stroke through the discharge valve.

The low pressure side may be defined as all that part of the system that is not on the high pressure side. It is as follows: From the throttle valve in and through the evaporator, the suction line, and the compressor, up to the bottom of the discharge valve.

35. Pressure and Temperature Relations

For every kind of refrigerant in a closed container, condensing unit, or evaporator, there is a definite pressure for every definite temperature. The chart at right gives the pressure of the several refrigerants at various temperatures. This chart should be thoroughly studied and understood by every service man.

The chart shows for example that liquid SO_2 at any given temperature requires a certain definite amount of pressure to keep it in a liquid state. A container (cylinder) of SO_2 liquid placed in a 70° F. room, and allowed to remain in the room until the temperature of the liquid was exactly 70° F. will have a corresponding gauge pressure of 35 lbs.

The same container placed in an 80° F. room under the same conditions, would have a corresponding pressure of 45 lbs. The same container placed in a room with a temperature of 100° F. would have a corresponding pressure of 69.8 lbs.

If the same container were again returned to the 70° F. room and allowed to cool down to the exact temperature of the room, the pressure would drop back down to 35 lbs.

36. Measurement of Pressure

In the study of pressure and temperature and their relation, it is necessary to understand the measurement of each. The thermometer is used to measure the temperature of a substance. The gauge is used to measure the pressure of the atmosphere and in the case of refrigeration, the refrigerant.

It has been determined that the atmosphere is exerting a pressure at all times and in all directions upon all substances exposed to the atmosphere. This pressure at sea level is approximately 14.7 lbs. per sq. in.

Pressure-Temperature Chart

Temp.	Freon	SO_2	NH_3	Isobutane C_4H_{10}	Methyl Chloride	Ethyl Chloride
-40	11.0 in.	23.5 in.	8.7 in.	....	15.8 in.	....
-35	8.4 in.	22.4 in.	5.4 in.	....	13.7 in.	....
-30	5.5 in.	21.2 in.	1.6 in.	....	11.4 in.	....
-25	2.3 in.	19.6 in.	1.3 lbs.	....	9.1 in.	25.9 in.
-20	0.5 lbs.	17.9 in.	3.6 lbs.	14.6 in.	6.1 in.	25.2 in.
-15	2.4 lbs.	16.1 in.	6.2 lbs.	13.0 in.	3.0 in.	24.5 in.
-10	4.5 lbs.	13.9 in.	9.0 lbs.	11.0 in.	.2 lbs.	23.7 in.
-5	6.8 lbs.	11.5 in.	12.2 lbs.	8.8 in.	2.0 lbs.	22.7 in.
0	9.2 lbs.	8.9 in.	15.7 lbs.	6.3 in.	4.1 lbs.	21.6 in.
+5	11.9 lbs.	5.9 in.	19.6 lbs.	3.3 in.	6.2 lbs.	20.5 in.
10	14.7 lbs.	2.6 in.	23.8 lbs.	.2 in.	8.7 lbs.	19.2 in.
15	17.7 lbs.	.5 lbs.	28.4 lbs.	1.6 lbs.	11.2 lbs.	17.7 in.
20	21.1 lbs.	2.5 lbs.	33.5 lbs.	3.5 lbs.	14.1 lbs.	16.1 in.
25	24.6 lbs.	4.6 lbs.	39.0 lbs.	5.5 lbs.	17.2 lbs.	14.3 in.
30	28.5 lbs.	7.0 lbs.	45.0 lbs.	7.6 lbs.	20.6 lbs.	12.4 in.
35	32.6 lbs.	9.6 lbs.	51.6 lbs.	9.9 lbs.	24.3 lbs.	10.3 in.
40	37.0 lbs.	12.4 lbs.	58.6 lbs.	12.2 lbs.	28.1 lbs.	8.0 in.
45	41.7 lbs.	15.5 lbs.	66.3 lbs.	14.8 lbs.	32.5 lbs.	5.5 in.
50	46.7 lbs.	18.8 lbs.	74.5 lbs.	17.8 lbs.	36.9 lbs.	2.7 in.
55	52.0 lbs.	22.4 lbs.	83.4 lbs.	20.8 lbs.	41.8 lbs.	.2 lbs.
60	57.7 lbs.	26.2 lbs.	92.9 lbs.	24.0 lbs.	46.9 lbs.	1.8 lbs.
65	63.7 lbs.	30.4 lbs.	103.1 lbs.	27.5 lbs.	52.8 lbs.	3.5 lbs.
70	70.1 lbs.	34.9 lbs.	114.1 lbs.	31.1 lbs.	58.8 lbs.	5.4 lbs.
75	76.9 lbs.	39.8 lbs.	125.8 lbs.	35.0 lbs.	65.2 lbs.	7.4 lbs.
80	84.1 lbs.	45.0 lbs.	138.3 lbs.	39.2 lbs.	72.1 lbs.	9.6 lbs.
85	91.7 lbs.	50.6 lbs.	151.7 lbs.	43.9 lbs.	79.4 lbs.	11.9 lbs.
90	99.6 lbs.	56.6 lbs.	165.9 lbs.	48.6 lbs.	87.3 lbs.	14.5 lbs.
95	108.1 lbs.	62.9 lbs.	181.1 lbs.	53.7 lbs.	95.4 lbs.	17.1 lbs.
100	116.9 lbs.	69.8 lbs.	197.2 lbs.	59.0 lbs.	104.4 lbs.	20.1 lbs.
105	126.2 lbs.	77.2 lbs.	214.2 lbs.	64.6 lbs.	113.5 lbs.	23.1 lbs.

For all practical purposes we speak of it as being 15 lbs. per sq. in., absolute pressure. Fifteen lbs. per sq. in. absolute pressure is equal to 0 lbs. gauge pressure.

In speaking of pressures above 15 lbs. absolute, or 0 lbs. gauge pressure, we speak of it as pounds per sq. in. above atmospheric pressure, for practical refrigeration application this is known as pound per sq. in. gauge.

Pressures below atmospheric pressure (0 lb. gauge) are termed

standard gauge, or 0 lbs. absolute.

Fig. 4 illustrates the common pressure gauge used in testing the pressure on the high pressure side of the refrigeration system. It ranges from 0 to 300 lbs. per sq. in.

Fig. 5 illustrates the standard compound gauge used in refrigeration work for measuring the pressure on the low pressure side of the system. It measures the vacuums from 0 lbs. to 30 in., for testing pressures below the atmospheric, and also measures pressures above atmospheric from 0 to 60 lbs. per sq. in.

From the above we find that pressure is like heat, inasmuch as there is always pressure present until the pressure has been removed, or for example on the compound gauge to 30 in. vacuum. The perfect vacuum has never been reached, for the lowest pressure ever obtained was 29+ inches of vacuum.

37. Saturated Vapor

Saturated vapor is known to be that vapor which is above the liquid in the refrigerant cylinder. In paragraph 35 we saw the effect of temperature on the pressure of refrigerant in a cylinder. The pressure measured in each of these cases was actually the saturated vapor pressure.

38. Super Heated Vapor

The vapor that is carried off from the evaporator through the suction line to the compressor in the refrigerant circuit is known as super-heated vapor. For super-heated vapor is that vapor which during the process of evaporation becomes separated from the liquid, having absorbed heat and become super-heated. This super-heat is given up by the refrigerant during the process of condensation in the condenser.

39. Cooling Mediums

There are two common methods of removing the super-heat from the vapor at the condenser. Air being forced over the condenser is the commonest method used in domestic refrigeration. Water is very extensively used as a cooling medium in commercial refrigeration. However, air-cooled condensing units in the smaller commercial sizes is not uncommon, and often very convenient where water is unavailable.

40. Increase Temperature; Increase Pressure

Referring again to paragraph 35, we note that when the cylinder of SO_2 was moved from the 70° F. room to the 80° F. room that the pressure increased from 35 lbs. to 45 lbs. This proves the point that with a higher temperature there is a correspondingly higher pressure.

This same rule holds true in condensing the compressed gas back into a liquid. The higher the temperature of the cooling medium, the higher the pressure necessary in the condenser upon the gas before it will condense back into a liquid.

In all cases the higher temperature of the compressed gas, hence the temperature of the condensing coil (condenser), the higher the pressure of the gas.

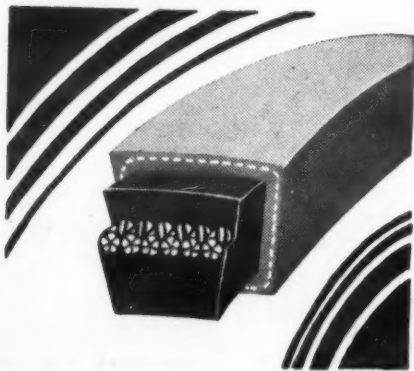
The higher the pressure the greater is the amount of work being done by the compressor and the efficiency of the compressor drops in proportion to the increase in pressure.

41. Higher Pressure; Higher Boiling Point

At atmospheric pressure we know that every liquid refrigerant has a definite boiling point. From the pressure-temperature chart we find that as a higher pressure is exerted upon the liquid the boiling point increases. The greater the pressure upon a liquid the higher the boiling point.

A common example is: water at atmospheric pressure 0 lbs. gauge boils at 212° F. If a pressure of 100 lbs. is exerted upon the water the boiling point will rise to 338° F. The reverse of the law is that when the pressure is lowered, so is the boiling point. It is common knowledge that water in the lower pressure areas on top of a high mountain will boil at temperatures lower than 212° F.

This same law holds true with refrigerants. For example methyl



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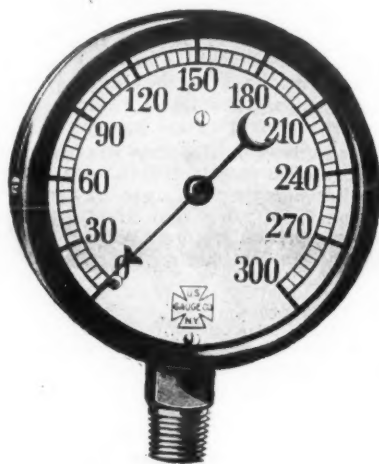


Fig. 4. Common pressure gauge used in testing pressures on the high pressure side of a refrigerating system.

vacuums. A perfect vacuum is reckoned to be 30 in. vacuum on the

Compound Gauge

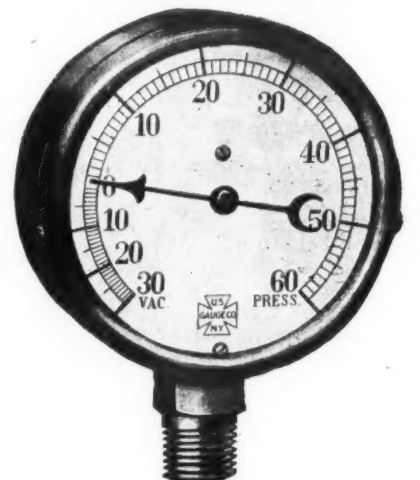


Fig. 5. Standard compound gauge used in refrigeration work. Can be used to measure low pressure side of the system.

chloride (CH_3Cl) at atmospheric pressure 0 lbs. gauge will boil at -11° F. If the pressure is increased to 15 lbs. the boiling point will rise to 15° F. A study of the chart will reveal all the different boiling points of the different refrigerants under different pressures.

It is due to this law that temperatures lower than the boiling point of the refrigerant are obtainable by controlling the pressure of the refrigerant entering the evaporator. This law also forms the basis of low pressure and thermostatic control, which will be given some study in this volume.

High and Low Pressure "Sides"

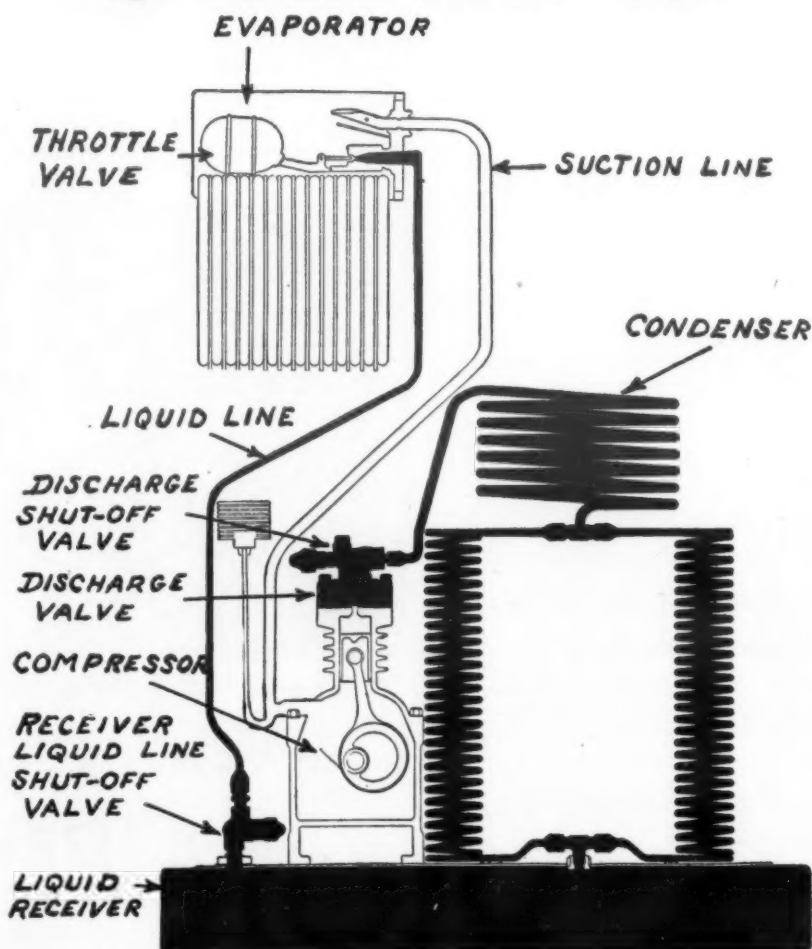


Fig. 3. In the drawing above the part of the system designated as the "high pressure" side is shown in heavy black ink; the low pressure side is the light part of the drawing.

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IN INSTRUCTING BEGINNERS IN SERVICE WORK

Lesson No. 1—Evacuating the Liquid Line (Flooded System)

By K. M. Newcum

REASON:

It is necessary to perform the above operation to facilitate making a new flare on either end of the liquid line, replacing split or defective flare nuts, removing receiver, removing coil, changing valves on receiver or coil, cleaning strainers, etc.

PROCEDURE:

A. Remove cap from top of liquid line valve with end wrench. (If liquid escapes, it is evident that the packing gland is leaking, thus tighten the packing gland with the packing gland wrench provided.)

B. Close liquid line shut off valve with box wrench, all the way to the right.

C. Install Compound gauge.

D. Put compressor into operation and operate for about 10 minutes. As the liquid is leaving the line, the line will become cold. When the line has been chilled and again warms up to normal room temperature, it is evident that all the liquid is removed.

E. After compressor has operated for about 10 minutes, remove the valve plug from the liquid line shut off valve on the cooling coil proper, and close this valve all the way to the right with the box wrench.

F. Stop the compressor.

G. Loosen the liquid line flare nut very slightly at the liquid line shut off valve. If no liquid comes out, proceed to disconnect the line by removing the flare nut from the fitting. (If liquid persists in coming out, tighten the flare nut, open the liquid line valve on the cooling coil, put the compressor back into operation for another 10 minutes, and proceed as outlined above.)

Note: If the line is to be left loose for any length of time, insert a 1/4 in. flare plug into liquid line and tighten. Replace the cap on the liquid line shut off valve on the receiver. Replace the plug in the liquid line valve on the cooling coil.

H. Check with instructor.

I. After checking with instructor, replace the liquid line to its original position. (Always examine the flare on the line, and if the flare is damaged, make a new one before putting the line back in place.)

J. Tighten the flare nut and proceed to purge the line as outlined in operation No. 5. Test for leaks with 26 per cent ammonia.

K. Check with the instructor.

Robins Adds 4 Stock Points for Artic Other Distributors Are Listed

WILMINGTON, Dela.—G. S. Robins & Co., distributor of refrigerant gases with main offices at St. Louis, have added four new Artic service stock points. Robins' stock points are now located in:

St. Louis; Kansas City; Davenport, Iowa; Cedar Rapids, Iowa; Des Moines; Tulsa, Okla.; Oklahoma City; and Dallas.

Complete list of stock points of Artic refrigerant for service work is as follows:

California—Pacific R. & H. Chemical Corp., El Monte; R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., San Francisco.

Colorado—Denver Fire Clay Co., Denver.

Georgia—Cheney Chemical Co., Atlanta.

Hawaiian Islands—Theodore H. Davies & Co., Ltd., Honolulu, T. H. Illinois—Chemical Distributors, Inc., Chicago.

Indiana—Wm. Lynn Chemical Co., Inc., Indianapolis.

Iowa—G. S. Robins & Co., Cedar Rapids, Davenport, and Des Moines.

Louisiana—Enochs Sales Co., New

Orleans.

Maryland—American Cyanamid Co., Maryland Chemical Div., Baltimore.

Massachusetts—National Ammonia Co., Inc., Boston.

Michigan—Eaton-Clark Co., Detroit.

Minnesota—Midwest Chemical Co., St. Paul.

Missouri—G. S. Robins & Co., Kansas City and St. Louis.

New Jersey—The Matheson Co., East Rutherford; National Ammonia Co., Inc., Newark.

New York—National Ammonia Co., Inc., New York City and Niagara Falls; The Matheson Co., White Plains.

North Carolina—The R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., Charlotte; Home Appliance Service Co., Greensboro.

Ohio—The Merkel Bros. Co., Cincinnati; The Cheney Chemical Co., Cleveland.

Oklahoma—G. S. Robins & Co., Oklahoma City and Tulsa.

Oregon—L. H. Butcher Co., Portland.

Pennsylvania—National Ammonia Co., Inc., Philadelphia and Pittsburgh.

Tennessee—Nashville Machine & Supply Co., Nashville.

Texas—G. S. Robins & Co., Dallas.

Utah—Denver Fire Clay Co., Salt Lake City.

Washington—L. H. Butcher Co., Seattle.

Wisconsin—Chemical Distributors, Inc., Milwaukee.

Baltimore Service Firm Moves Headquarters

BALTIMORE—Electric Refrigeration Co., independent service company here formerly at 3501 Greenmount Ave., has moved to 524 E. 25th St. The company is dealer for General Electric appliances, services all makes of electric refrigerators, and buys and sells used refrigerators.

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McGovern Answers 2 Questions on Use of Methyl Chloride

WILMINGTON, Del.—E. W. McGovern of the R. & H. Chemicals Department, E. I. du Pont de Nemours & Co., Inc., has recently answered two questions of importance to service men handling methyl chloride units.

In answering the question: "Do you recommend the use of methanol (methyl alcohol) in refrigeration systems charged with methyl chloride to prevent the separation of moisture as ice at the expansion valve?" Mr. McGovern says:

The use of methyl alcohol as an anti-freeze in methyl chloride systems is claimed by U. S. Patent 1,570,080. Satisfactory results have been reported by some using this procedure, but it is best that the use of methanol be regarded as an emergency measure and its use should be followed as soon as possible by removal of moisture by a drying agent such as calcium oxide or soda lime. While methanol is not in itself harmful in the refrigerating system, nevertheless over a long period of time and with high operating temperatures this water may cause slight corrosion.

In answer to the next question: "What would cause the deposition of a brown, gummy substance on the crankcase walls of a methyl chloride compressor? Is there a possibility that due to a mistake in servicing, some sulphur dioxide may have been mixed with the methyl chloride?" Mr. McGovern declares:

Trouble of this nature can usually be traced to the use of unsuitable lubricants or to the wrong type of gasket material.

When unsuitable lubricant is used, trouble as above described can arise in several ways. If, as mentioned, sulphur dioxide were introduced into the system, the lubricant would be attacked unless it was of a special type suitable for use with sulphur dioxide. If a very low grade oil is used, it may break down under operating conditions in the compressor and form a sludge, and this need have nothing to do with the refrigerant which is used.

If improper gasket material is used, there is a tendency for methyl chloride to dissolve soluble constituents from the gaskets and these might then deposit in other parts of the system.

Quebec May License Service Firms

QUEBEC, Que., Can.—A new law recently passed in the Province of Quebec requires that all persons engaged in the manufacture, installation, and engineering of refrigeration equipment in excess of 1-hp. size be licensed.

After applying for a license, manufacturers, contractors, engineers, journeymen, and apprentices must satisfactorily pass an examination on the fundamental principles and practical application of refrigeration as well as practical engineering connected with refrigeration.

The same examination serves as a basis for the Contractor's License (\$25.00 per annum) and the Journeyman's Engineers license (on payment of an additional fee). This license permits the contractor, manufacturer, or engineer to undertake refrigeration work of any kind including ammonia, carbon dioxide, Freon, or brine systems.

Contractor's Special License (\$25.00 per annum) is the same as above except that the contractor may not undertake any refrigeration work involving the use of ammonia, carbon dioxide, Freon, or brine systems.

To obtain a Journeyman's License (\$20.00 per annum), an applicant must satisfy the examiners as to his experience and training as well as satisfactorily pass the prescribed examination. Having obtained the license, a journeyman may be employed on any refrigeration work by a licensed contractor only.

Journeyman's Special License (\$20.00 per annum) has the same requirements as the Journeyman's license except that the licensee may not undertake work on ammonia, carbon dioxide, Freon, or brine systems.

Although no examination is required until the fourth year's experience is entered upon, all apprentices must be licensed. Price is \$2.00 per annum.

A journeyman's license does not entitle the holder to do work on ammonia, carbon dioxide, Freon, or brine systems for an employer with a contractor's special license.

Cooper-Louisville Shows Increase in Sales

LOUISVILLE—A gain of 501 per cent in sales of February, 1935, over the same month last year is reported by J. E. Johnson, president, Cooper-Louisville Co., Crosley distributor here.

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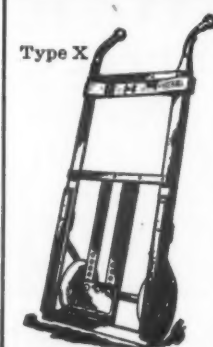
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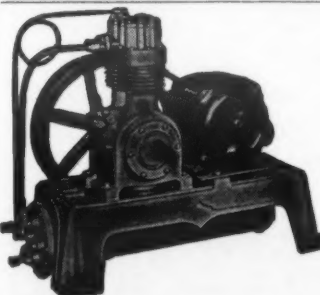


The
DAYTON CARRIER TRUCK
Deliver your Refrigerators on Rubber
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Two sizes—Type X with 53 inch handles and 8 inch rubber wheels—Type Y with 70 inch handles, 8 inch rubber wheels and skids.

Type X with one strap\$17.00
Type Y with one strap 18.50
f.o.b. Dayton

International Engineering Inc.
Dayton, Ohio 15 Park Row, N. Y.



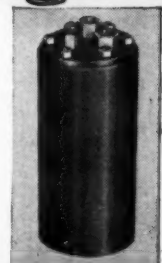
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OUTSTANDING PERFORMANCE
attested by satisfied users
— EVERYWHERE!

Sturdy Condensing Units from 80 to 2868 Lbs. I.M.E., and all other commercial refrigeration equipment—Wall type cases with machinery—A beautiful household line of modern, conservative styles—Write for full data.

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OIL SEPARATORS
with AUTOMATIC OIL RETURN

Write for bulletin on complete line covering refrigerating appliances, liquid line filters, dehydrators, acid neutralizers, standard parts and materials, service tools, shaft seals, bearing metals and parts. Descriptive literature will be gladly furnished on any or all of these lines on request.

AMERICAN INJECTOR COMPANY 1481-14th Street, Detroit, Mich.

The Matheson Co.
EAST RUTHERFORD N.J.

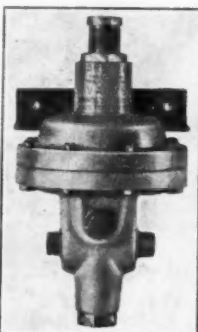
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REFRIGERATOR OILS

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MANUFACTURERS SPECIALIZING IN SERVICE
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SPECIAL ADVERTISING RATE (this column only)—\$12.00 per space.
Payment is required monthly in advance to obtain this special low rate.
Minimum Contract for this column—13 insertions in consecutive issues.



BAROSTAT VALVES

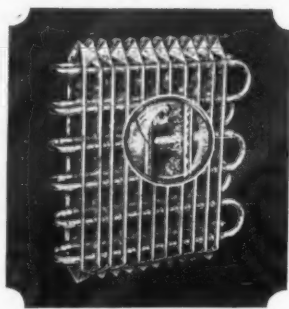
The Dependable Two Temperature Valve
It regulates pressure

Positive Seal — Snap Action — Adjustable

Built for Freon, Methyl Chloride, Sulphur Dioxide with non-corrosive parts thru-out. Approved by leading manufacturers.

Write for prices and description

BAROSTAT Co. 48 Binford St. Boston, Mass.



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The Coil with a Permanent Fin Contact
Standard size for every commercial application—
Suitable for all refrigerants—
Greater conductivity, greater efficiency—
Special sizes for air conditioning.

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2821 Montrose Ave. Chicago

HULL Improved Leak Detector

The most convenient, surest and quickest means of detecting and locating Halide Gas Leaks in refrigerating units.

Positive, Instantaneous

... most sensitive and accurate

Improved burner design, "Y" suction tube and non-clogging feed valve make the HULL Detector the most efficient for all testing and servicing requirements. Recommended and used by manufacturers of Halide Refrigerant Gases, equipment manufacturers and engineers everywhere. Low first cost and inexpensive operation.

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Hull Manufacturing Co. 910 Prospect Ave. Hagerstown, Maryland



ACTION-AIR

A diffused air system for Walk-In Coolers. No changes required in present set-up. Endorsed by National packers, abattoir companies, wholesalers and retailers. Three years of successful operation

Shrinkage is of paramount importance in the meat industry.

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Certain territories open for good distributors



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8,000 ITEMS FOR ALL MAKES
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On our mailing list will insure your getting the new monthly magazine "The A-P Control" which is devoted to new developments in control equipment for air conditioning and refrigeration. Send in your name today.

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Trucks Built to Last a Lifetime

The heavy duty X-70 Refrigerator Truck fits all cabinets with or without legs or in the crate. Prevents damage to the cabinet, floor or walls. Only pads touch cabinet. Sturdy all-steel frame. One truck with top casters and handles for tilting and rolling into delivery truck and on stairs. Complete set \$34.50. Ball bearing swivel casters on one end \$5 extra.

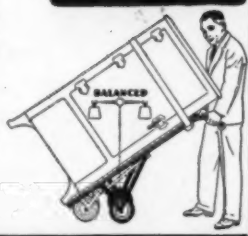
The Balance Refrigerator Truck (shown)

Ideal for heavy boxes, crates, stoves and furniture. Padded nose piece has instant, exact adjustment. Price \$25. Write for free circular.

Self-Lifting Piano Truck Co.

Findlay, Ohio

Manufacturers of Trucks Since 1901



INSTALLATION OPERATIONS

A SERIES OF LESSONS OUTLINED FOR THE USE OF THE SERVICE MANAGER IN INSTRUCTING BEGINNERS IN INSTALLATION WORK

Lesson No. 1—Making a Flare (Punch and Block Method)

By K. M. Newcum

MATERIAL NEEDED:

One piece of 1/2 in. tubing, 12 in. long; one piece of 1/4 in. tubing, 12 in. long; one 1/2 in. flare nut; one 1/4 in. flare nut.

TOOLS NEEDED:

Tubing saw (hack saw), 10-in. mill file, flare block, flare punch, 5/16-in. tee handle wrench, and hammer.

PROCEDURE:

1. Break off sealed end of tubing with the pliers.
2. Hold open end of tubing down so that any cutting or filings will not go into the open tube.
3. Place flare block over end of tubing to be used as a guide in sawing the rough edge off.
4. Saw end of tubing off square with the side of the flare block.
5. Slide flare block back on the tubing about 1/8 in. and file tubing square and smooth, being sure to remove all the rough edges.
6. Insert end of file into end of tubing, using the file as a reamer. Ream all the edge off the tubing until the end is square and smooth.
7. Check the distance from the flare block to the end of the tubing. It should be 1/8 in., as this length will assure a flare of the correct size.
8. Insert flare punch into end of tubing, and tap lightly with the hammer.
9. Revolve punch with the fingers while tapping.
10. Tap lightly until the flare has been completely formed, but do not tap or mash the flare out too far. Leave a thick shoulder on the flare.
11. Check with instructor.

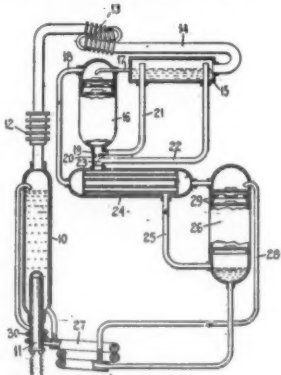
NOTE: In practice always put the flare nut on the tubing before the flare has been made.

PATENTS

Issued April 2, 1935

1,996,094. ABSORPTION REFRIGERATING APPARATUS AND METHOD. Sigurd Mattias Backstrom, Stockholm, Sweden, assignor, by mesne assignments to Electrolux Servel Corporation, New York, N. Y., a corporation of Delaware. Application Feb. 10, 1931. Serial No. 514,753. In Germany July 25, 1930. 20 Claims. (Cl. 62-119.5.)

1. A refrigerating apparatus of the continuous absorption type in which circulates a pressure equalizing gas including



1,996,094

a closed fluid container in the liquid refrigerant supply line from the condenser to the evaporator, a perforated baffle plate in the gas conduit between the evaporator and the absorber, and said apparatus including a path for fluid around said baffle plate and through said container.

1,996,105. HEAT TRANSFER ELEMENT. Robert M. Gates, Scarsdale, N. Y., assignor to The Superheater Co., New York, N. Y. Application May 11, 1933. Serial No. 670,432. 4 Claims. (Cl. 257-262.)

1. In apparatus of the class described, the combination of a pipe, a fin welded to the exterior of the pipe along a line parallel to its axis and comprising a strip relatively thin in a radial direction and in contact with the pipe and pins unitary with it and extending in a direction away from the pipe, the pins being generally oval in cross-section with the long dimension of the oval transverse to the fin.

1,996,274. MEANS AND METHOD FOR FREEZING A CLEAR ICE BLOCK. Dana Burks, Jr., Urbana, Ill., assignor to Board of Trustees, University of Illinois, Urbana, Ill., a corporation of Illinois. Application June 19, 1930. Serial No. 462,221. 21 Claims. (Cl. 62-159.)

1. In a can for freezing artificial ice, side members joined together to form a rectangle, a bottom member closing one end of said rectangle, a liquid-tight joint connecting said members, means in said bottom member adjacent said side mem-

bers for admitting compressed air to the liquid in the can to prevent undue concentration of solute at the solid liquid interface, said means being disabled by the formation of a shell of ice adjacent said members, and other means connected with the first means and operative after the first means is inoperative to admit air into the core of liquid within said shell to prevent stratification of it.

1,996,330. FLUID CONTROL UNIT. Irl R. Goshaw, Nutley, N. J. Application Nov. 3, 1933. Serial No. 696,548. 15 Claims. (Cl. 236-12.)

1. In a fluid control device for maintaining the temperature of two fluids, varying in temperature and volume, at a substantially constant intermediate temperature, comprising a casing having a plurality of inlets and an outlet, a plurality of valves operative by pressure to control the flow of said fluids from said inlets to said outlet in accordance with changes in pressure of said fluids, and thermostatic means directly connected to said plurality of valves for controlling the operation thereof in accordance with the temperatures of the fluids being mixed.

1,996,435. THERMAL INSULATION. Thomas J. O'Neil, Boundbrook, N. J., assignor to Johns-Manville Corp., New York, N. Y., a corporation of New York. Application March 5, 1932. Serial No. 596,981. 3 Claims. (Cl. 154-45.)

1. A thermal insulating article comprising a flat flexible assembly of superimposed layers of insulating fabric attached to one another in a single relatively narrow zone and adapted to be shaped into the form of a tube length approximately parallel to the relatively narrow zone, the said layers of fabric being of widths increasing with the distance of the layers from one side of the assembly, to adapt the edges of each layer to abut after shaping into tubular form, and the side edges of the several layers being in staggered relationship adapted to cause the abutment of the side edges of the several layers to form a broken longitudinal joint.

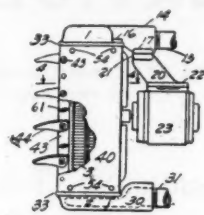
1,996,441. REFRIGERATING APPARATUS. Harry F. Smith, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp., a corporation of Delaware. Application Dec. 17, 1928. Serial No. 326,464. Renewed Dec. 12, 1931. 25 Claims. (Cl. 62-118.)

23. Refrigerating apparatus comprising in combination a refrigerant circuit including an evaporator, a second refrigerant circuit including as elements thereof a condenser, a second evaporator and connections therebetween, said condenser being located in heat transfer relation with the first mentioned evaporator, and being in open communication with said second evaporator whereby condensation and evaporation take place at substantially the same pressures, the elements of the secondary circuit being so arranged that the force of gravity must be overcome to return liquid refrigerant collecting in said condenser to said secondary evaporator.

1,996,499. HEAT EXCHANGER UNIT. Fred M. Young, Racine, Wis., assignor to Young Radiator Co., Racine, Wis. Application Aug. 3, 1934. Serial No. 738,264. 14 Claims. (Cl. 257-137.)

3. A heat exchange unit, comprising a

number of tubes having a multiplicity of fins, through which said tubes extend, forming a radiator core, suitable upper and lower headers for said core, having

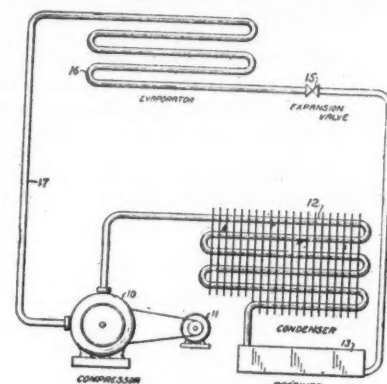


1,996,499

rearwardly extending inlet and outlet members, forming an integral part thereof and having rearwardly directed openings at their ends, a fan motor and an outwardly extending support therefor, the rearwardly extending member on said upper header having means thereby to form a supporting connection for said fan motor support.

1,996,538. REFRIGERANT. Jesse B. Churchill, Plympton, Mass., assignor of one-third to Harry D. Edwards, Larchmont, N. Y., and one-third to Edward T. Williams, Pelham Manor, N. Y. Application Oct. 2, 1933. Serial No. 692,818. 7 Claims. (Cl. 62-178.)

1. A refrigerating process which comprises evaporating isopropyl chloride by reducing the pressure thereon below at-



1,996,538

mospheric pressure compressing the resulting vapor to a pressure below atmospheric pressure and cooling the same to liquefy the vapor and returning the liquefied isopropyl chloride to be again vaporized.

1,996,605. REFRIGERATOR EVAPORATOR. Leonard W. Atchison, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Application Sept. 20, 1934. Serial No. 744,794. 13 Claims. (Cl. 62-126.)

1. An evaporator of the flooded type for refrigerating apparatus containing a body of vaporizable liquid refrigerant, and means for initiating vaporization of said body of liquid refrigerant, said means providing a body of vaporized refrigerant exposed to a free surface of said liquid refrigerant and retained thereby below a portion of said body of liquid refrigerant.

Midwest & Davies to Sell Artic Refrigerants

WILMINGTON, Del.—The Midwest Chemical Co., St. Paul, and Theodore H. Davies & Co., Ltd., Honolulu, T. H., were recently appointed distributors for Artic refrigerant by R. & H. Chemicals Dept., E. I. du Pont de Nemours, Inc.

The Thompson-Hayward Chemical Co., with main offices in Kansas City, and Hunzicker Bros. Co., Oklahoma City, are no longer distributors for Artic.

Monongahela Utility Ahead of Quota

PARKERSBURG, W. Va.—Total sales of the Monongahela West Penn Public Service Co. for the first half of an eight-weeks' Frigidaire campaign reached \$38,353.97 or a percentage of 54.7 of the quota of \$70,000.

Keeping Pace

OUR engineering staff is continually alert to improve the line of ACE HARD RUBBER DOORS, RAILS, JAMBS and other parts for Display Refrigeration Equipment. Manufacturers look to us for standard products and dependable service. They get it.

A complete catalogue will be mailed to manufacturer who wishes to consider Ace products and Ace service.

AMERICAN HARD RUBBER CO.
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Akron, O. • 111 W. Washington St., Chicago

CURTIS REFRIGERATION

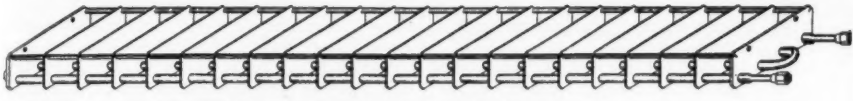
Commercial & domestic units, 1/6 h.p.—15 h.p.
Distributor franchises available. Write to:
CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Company
1912 Kienlen Ave., St. Louis, Mo.

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MANUFACTURERS SPECIALIZING IN SERVICE
TO THE REFRIGERATION INDUSTRY

SPECIAL ADVERTISING RATE (this column only)—\$12.00 per space.
Payment is required monthly in advance to obtain this special low rate.
Minimum Contract for this column—13 insertions in consecutive issues.

PEERLESS "FREEZER" COILS



Designed for all BELOW-FREEZING Applications.
A Heavy Duty coil—fins and tubing on 2" centers.
For Chilling Rooms, Ice Cream Hardening and Storage, Freezing Compartments of all types. Especially adapted for water and beverage cooling.
Better and cheaper than plain pipe coils.

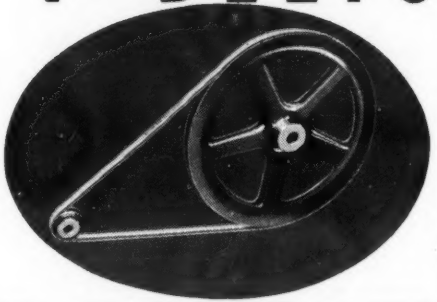
PEERLESS ICE MACHINE COMPANY
CHICAGO TWO FACTORIES NEW YORK
515 W. 35th St. 43-00 36th St., L.L.C.

DAYTON V-BELTS

There is a Dayton V-Belt made especially for all makes and types of refrigerators, washing machines and other appliances. A stock is available near you. Send for price list and name of your nearest distributor.

THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO

The world's largest manufacturer of V-Belts



QUESTIONS

Artificial Foods

No. 2178 (Manufacturer, Ohio)—"A few issues ago in your magazine I noticed a manufacturer of papier mache products—made to simulate meat, fruit, cheese in a display refrigerator."

"I would appreciate it if you would send me his address, as we are interested in obtaining these."

Answer: We believe the company to which you have reference is the Cincinnati Doll Co., 311 E. 12th St., Cincinnati, Ohio, which has been advertising artificial foods for electric refrigerators in recent issues of ELECTRIC REFRIGERATION NEWS.

Finned Tubing

No. 2179 (Dealer Texas)—"Would you kindly mail us the names of the manufacturers of stock lengths finned copper tubing?"

Answer: Manufacturers of finned tubing are listed on pages 318 and 320 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Whitehead Refrigerator

No. 2180 (Reader, Massachusetts)—"Can you give me any information concerning a White Head refrigerator?"

"What company has its parts? Is there a manual?"

"I would appreciate very much any details you can send me concerning this machine."

Answer: The Whitehead electric refrigerator was manufactured by the Whitehead Refrigeration Co., a division of Whitehead & Kales, Detroit, Mich. Whitehead & Kales discontinued refrigeration activities in 1932, and sold their Hermetic unit to the Kelvinator Corp.

For parts for the Whitehead refrigeration unit, we suggest that you write to the Kelvinator Corp., 14250 Plymouth Road, Detroit, Mich., and to Whitehead & Kales Co., Haltiner at West Jefferson, River Rouge, Mich. It is probable that one of these companies can supply parts for this machine.

Water Cooling Units

No. 2181 (Distributor, Pennsylvania)—"Kindly give me the names and addresses of several manufacturers who make water cooling units."

Answer: Manufacturers of complete bottle type water coolers, complete pressure type water coolers and water cooling low sides are listed on pages 214, 215, and 216 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

U.S. & Export Sales

No. 2182 (Manufacturer, Illinois)—"If you are in possession of the statistics on the numbers of household refrigerators sold during 1935 for domestic use and for export, I should be very grateful to you if you would forward this information to me."

"I would like to know the figures on the refrigerators and the chests separately, also the figures on domestic and export separately."

Answer: We have estimated that during 1934, manufacturers of household electric refrigerators sold 1,390,000 units to distributors and dealers. Of this total 1,284,000 were sold in the United States alone, while 106,000 were shipped to foreign countries and United States possessions.

During 1934, 23,835 household refrigerators of under 3-cu. ft. capacity were sold in the United States.

During the first two months of 1935, we have estimated that industry manufacturers sold approximately 230,900 household electric refrigerators to distributors and dealers throughout the world. Exports for the first two months of the year totaled approximately 11,000 units. During the first two months of 1935, 3,846 refrigerators under 3-cu. ft. capacity were sold throughout the world. Of this total 1,679 units were shipped to foreign countries and United States possessions.

Counter Freezers

No. 2183 (Dealer, Arkansas)—"Will you kindly send me a list of all counter ice cream freezer manufacturers. I do not wish the representatives of these companies to call on me, so will appreciate it very much if you will send me this list of manufacturers."

Answer: Manufacturers of ice cream freezers are listed on pages 203 and 204 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Trucks & Trailers

No. 2184 (Manufacturer, Illinois)—"Kindly forward us a copy of your 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK which includes information on refrigeration of motor trucks and trailers."

"We would like to have you send

us also any copies of ELECTRIC REFRIGERATION NEWS which have contained news articles or information on refrigeration of trucks and truck cooling equipment news."

Answer: ELECTRIC REFRIGERATION NEWS, the weekly newspaper of the electric refrigeration industry, covers the field of truck refrigeration in the same complete manner that it covers other phases of the electric refrigeration field.

Reference to various articles on truck refrigeration published in 1934 are:

Feb. 21, 1934, and Oct. 3, 1934, the McCord Petrosas system for cooling trucks; Sept. 19, 1934, Louis Allis Co. "Dynamatic" drive adapted for refrigerated trucks; Oct. 17, page 4, Kold-Hold forced-convection cooling system for trucks; Oct. 17, page 6, Kelvinator's four condensing units for trucks; Oct. 24, 1934, Refrigerated trucks at Cleveland Dairy Show; Nov. 14, 1934, page 9, General Electric's power take-off drive and heat exchanger; Nov. 28, 1934, Century Electric Co. to market Whitaker-Upp units.

You may obtain any of the back issues in which these articles appeared at a cost of 10 cents each by addressing Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

Grunow Prices

No. 2185 (Dealer, California)—"Please furnish us with latest retail prices on all models of Grunow refrigerators as sold by Detroit dealers."

Answer: Retail prices for all models of Grunow refrigerators were published in the March 20, 1935, specifications issue of ELECTRIC REFRIGERATION NEWS. These are the approximate prices for the Detroit area, according to the Grunow distributor here.

Receiver Tanks

No. 2186 (Manufacturer, Illinois)—"We wish to request that you give us a list of approximately six of the most prominent receiver tank manufacturers."

Answer: Manufacturers of receiver tanks are listed on page 274 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Carrene Refrigerators

No. 2187 (Dealer, California)—"Will you please send us the following information:

"What refrigerator companies used chlorine gas? When? and for how long? Is Grunow refrigerator the only one using chlorine, and is it patented?"

"Please send us your book or magazine which gives all the information and data of the 16 leading refrigerators used today."

Answer: We believe that you must have reference to "Carrene" instead of "Chlorine." The Grunow household electric refrigerator is the only one which is using the refrigerant Carrene. Exclusive rights for its use in household electric refrigerators were granted to William C. Grunow by the Carrier Corp. in 1932.

Complete specifications of all leading makes of household electric refrigerators were published in the March 20 issue of ELECTRIC REFRIGERATION NEWS.

Truscon Refrigerator

No. 2188 (Distributor, Georgia)—"One of my good customers and one of my good distributors have asked me to obtain some information on Truscon refrigerators. I have not been at the office since the March 20 issue of ELECTRIC REFRIGERATION NEWS arrived, so am unable to supply this information. I would like to have what information you can give us."

Answer: Specifications of Truscon household electric refrigerators were published in the March 20 issue of ELECTRIC REFRIGERATION NEWS. A news story concerning Truscon's 1935 models was published on page 1 of the April 1 issue of ELECTRIC REFRIGERATION NEWS.

Back issues of the NEWS may be had at a cost of 10 cents each by addressing the Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

Refrigerator Cabinets

No. 2189 (Distributor, California)—"We would appreciate your sending us your list of manufacturers of refrigerator cabinets."

WE FULFILL A DEFINITE NEED IN THE REFRIGERATION FIELD

We Train Men!

Trained men are the greatest asset the Refrigeration Industry can have. There have never been enough properly trained refrigeration men qualified to handle sales engineering, installation and servicing requirements in all distributing areas. Trained men will build this industry quicker than new men can be found to fill new positions.

We are proud of the part we have played in building the Refrigeration Industry to its present vast proportions by constantly supplying it with men trained to promote its further growth. As the leading school in the refrigeration field we offer our services to both those desiring personal training and the services of trained men.

FOUNDED 1927

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PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS WANTED

SERVICE MANAGER available, 12 years refrigeration experience, specializing in ice cream refrigeration for the past 10 years. Have installed, serviced, and rebuilt all types of equipment, compressors, cabinets and fountain. Able to direct and train men and build up an efficient service organization. Box 694, Electric Refrigeration News.

FRANCHISE WANTED

MANUFACTURERS of replacement refrigerator parts, accessories and supplies can secure an outlet in two of the larger eastern cities for their products. We are interested in what you have to offer from a warehouse or distributor standpoint. Our business with the independent service man is already established. Box 695, Electric Refrigeration News.

EQUIPMENT FOR SALE

REFRIGERATOR DEALERS—We carry a most complete stock of new and reconditioned refrigerators; all makes and sizes. Priced right for retail resale. Our modern equipped factory guarantees A-1 reconditioning. Special discounts for quantity purchases. New and used refrigerators bought for cash—any quantities. Send for list of refrigerators in stock and prices. Federal Refrigerator Corporation, 453 11th Ave., New York, N. Y.

FOR SALE—1-1/2 Hp. Model K complete Frigidaire compressor \$62.50. 1-1/2 Hp. model N \$75.00. 1-1 Hp. model C \$100.00 all with single phase motors complete. Frigidaire boiler, 2 tray, \$3.50 each. Air cooled condensers \$1.50 and up. Valves 50¢ each. F.O.B. Chicago, Ill. Commodore Electric Company, 521 N. Wells St.

REPAIRS

HALELECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn. Ranco, Tag., etc. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Halelectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Answer: Manufacturers of cabinets for household electric refrigerators are listed on page 226 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Comparative Data

No. 2190 (Manufacturer, Michigan)—"In a recent conversation with a refrigeration salesman I learned that there is a charted record of various refrigerators made by some business organization (not a biased company) that made the tests for the sake of comparative merits."

"I certainly would like this information for my personal file, not to use as sales leverage. If you can give me the data I'll certainly appreciate it. At least give me the name of the bureau or organization and their address if you can't give me the information."

Answer: You may perhaps refer to the comparative specifications of household electric refrigerators which we have compiled in each of the last several years. These specifications give the dimensions of cabinets and data covering refrigerating units, and also give the type and make of various component parts, such as the condenser, evaporator, and control used in each refrigerator.

Specifications for 1935 covering 281 models of household electric refrigerators were published in the March 20 issue of ELECTRIC REFRIGERATION NEWS.

Comparative performance data on various makes of refrigerators has never, to our knowledge, been issued publicly by an unbiased authority; although individual manufacturers have put out comparisons of this nature on occasion.

Group Subscription Rates

The following special rates are for PAID-IN-ADVANCE subscriptions only in the United States and Possessions and Pan-American Postal Union Countries. Charge orders are billed at the single-subscription rate, regardless of number. Papers will be mailed to individual addresses.

Electric Refrigeration News (weekly)	1935 Refrigeration Directory and Market Data Book (2 volumes)	Both Electric Refrigeration News and Refrigeration Directory
1 subscription.....\$3.00	\$5.00	\$6.50
5 or more each.....2.75	4.50	6.50
10 or more each.....2.50	4.00	6.50
20 or more each.....2.25	3.50	5.75
50 or more each.....2.00	3.00	5.00
75 or more each.....1.75	2.50	4.25
100 or more each.....1.50	2.00	3.50

For All Other Countries (Except Canada)

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20 or more each.....4.25	4.50	7.50
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Canadian Rates (including tariff of 5 cents per copy on the News)

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